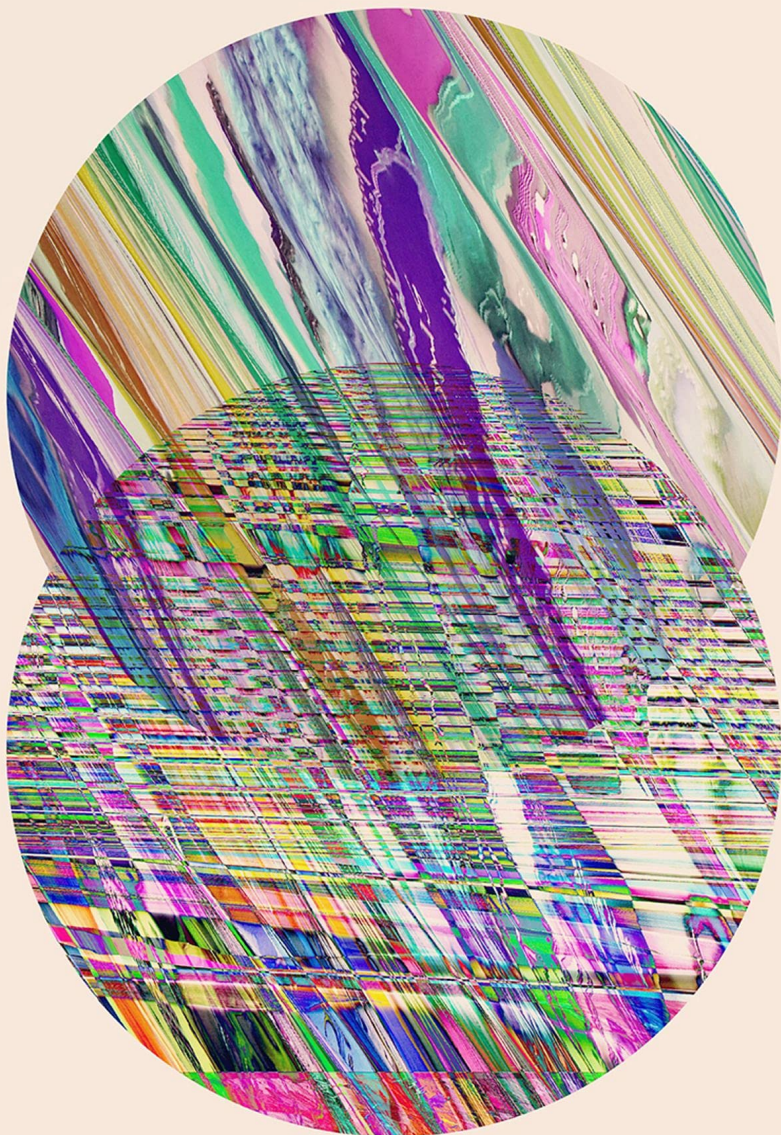


ANNA MARMODORO

**FORMS & STRUCTURE IN
PLATO'S METAPHYSICS**



Forms and Structure in Plato's Metaphysics

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ANNA MARMODORO

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Introduction

This book investigates the thought of some of the greatest metaphysicians of antiquity, in relation to something they were after, but that repeatedly eluded them. It is an account of their quest to discover, reify in their ontologies, and explain what *structure* is. Structure is to be found in the natural world, in our mental life, in any work of craftsmanship and art: a plant, an intention, an engine are all instances of structured entities; at the origin of life itself, there are structured physical processes. The universe as a whole is called *cosmos* on account of the beauty of its structure. Is structure ineliminably part of the foundations of the world? And how is it to be explained, ontologically?

The investigation of the metaphysics of structure drives the development of three among the main philosophical systems of antiquity: that of Anaxagoras, of Plato, and of Aristotle. It is a *trait d'union* between their different metaphysical views about reality. I start here with an investigation of Anaxagoras's ontology,¹ which will serve as a foil for understanding the development of Plato's views concerning structure, and their impact on those of Aristotle.² In chapters 1 and 2 I show that

¹ Chapters 1 and 2 of this book draw substantially, and in certain sections *verbatim*, on Marmodoro (2017b), although there is also new material on Anaxagoras here presented. It is part of my overarching argument here that Plato develops his own metaphysics in (critical) engagement with that of Anaxagoras. It is therefore essential to present to the reader a detailed account of Anaxagoras's views (as I interpret them) where relevant to those of Plato examined here; for this reason, I make such account here available, even if some readers might be already familiar with it.

² Although the issue of the relation between Plato's and Anaxagoras's metaphysical systems has been hardly investigated in modern scholarship, there are some notable exceptions. Among the most recent literature, a helpful point of reference is Mann (2000). Mann's work is helpful not only because of the 'comparative' approach it takes to Anaxagoras's, Plato's, and Aristotle's systems, and the discussion of philosophical issues that span these three systems, but also, specifically, because it provides references to ancient sources who saw philosophical connections between Anaxagoras and Plato, and to the modern literature, up to the very late 1990s (in Mann 2000: 118, ft. 75). Among modern studies, Denyer (1983) also deserves a special mention as a milestone in the debate concerning Anaxagoras's influence on Plato.

Anaxagoras reifies in his ontology two types of entity: properties (the so-called Opposites) and structure (the so-called seeds).³ He posits properties and structures as distinct types of *constituents* of things. The Opposites are physical properties, such as being hot or being heavy. I argue that for Anaxagoras, such properties are *causal powers*; however, they are causal powers that are tailor-fit to meet the strictures on change that Anaxagoras inherits from Parmenides. Anaxagoras's causal powers do not get activated by interacting with other powers; they are continuously exercising their powerfulness, without passing from a state of inactivity to a state of activation. Crucially, they also have a distinctive type of causal efficacy, which I call *constitutional causation*. For Anaxagoras, an object is qualified by an Opposite (e.g., as hot) by coming to have *within its own constitution* shares or parts of that Opposite (e.g., the Opposite Hot).⁴ In this sense, things in the world *overlap constitutionally* with the Opposites that qualify them. So, constitutional overlap between properties and the objects they qualify is the 'mechanism' that Anaxagoras introduces in his system to explain how objects come to have the properties they have. What makes Anaxagoras's stance, that *parts of properties are parts of objects*, remarkable to the modern reader is that this idea is at the centre of today's metaphysical debates. David Lewis, for instance, writes that 'universals or tropes are non-spatiotemporal parts of ordinary particulars that in turn are parts of worlds' (1986b: 86). For the scholar of ancient philosophy, on the other hand, the significance of Anaxagoras's stance is that it is pivotal for understanding Plato's metaphysics of objects and properties, as I will show, in ways that haven't been investigated before.

In the central chapters of the book, I examine Plato's Anaxagoreanism, by which I mean the significant ways in which Plato is influenced by Anaxagoras's metaphysics in developing his own. The case for Plato's Anaxagoreanism is twofold: on the one hand, it rests on how much Plato engages, critically, with Anaxagoras's ideas (as

³ I capitalize 'Opposites' to refer to them under the unique conception Anaxagoras has of them, by analogy to how Plato's Forms are standardly capitalized to capture their unique features and distinguish them from Aristotle's forms.

⁴ Because of other assumptions of Anaxagoras, we will see (in section 2.2 of chapter 2) that only properties whose parts or shares are in preponderance in an object qualify the object.

I show in chapter 4); and on the other, it rests on the breakthroughs Plato achieves by applying and extending Anaxagoras's idea of constitutional overlap, to solve challenging metaphysical problems beyond those addressed by Anaxagoras (which I discuss in chapter 6).⁵ Within the context of presenting and examining Plato's Anaxagoreanism, I begin by discussing in chapter 3 the topic of the powerfulness or causal efficacy of Plato's Forms. I submit that, following Anaxagoras, and more generally the Ionian tradition, Plato posits that the 'building blocks' of reality are causal powers; his so-called *Eleatic Principle* states that *being powerful is the criterion for being*. For Plato however the building blocks of reality include, in addition to the physical properties identified by Anaxagoras (such as the hot and the wet), other types of (opposite) properties (such as the beautiful and the just), as well as some structural properties (such as equality). Further, for Plato, the building blocks of reality do not have the physical status they have in Anaxagoras's ontology; they are instead transcendent entities—they are the Forms. Yet, Plato follows Anaxagoras in treating his Forms as having a constitutional causal efficacy. As the reader might expect, in Plato's metaphysics the outcome is a surprising one: sensible objects are, e.g., hot, by having within their constitution a part of the Form of Heat, which is a non-physical, transcendent power. I argue that in taking this position, Plato achieves a milestone in the history of metaphysics, which has not been hitherto identified in the scholarly literature. This is Plato's conception of *transcendent powers*, and the nature of their normativity on the world, which I will explain and justify in chapter 3, from Plato's perspective.

Plato's Anaxagoreanism goes further than conceiving of the Forms as powers exercising constitutional causal efficacy, as Anaxagoras conceives of his Opposites. My overarching argument in the middle part of the book is that Plato endorses the explanatory value of treating properties as constituents of things, and aims to extend Anaxagoras's use of constitutional overlap, to account for a number

⁵ The reader might find surprising, vis-à-vis my interpretative thesis, that Plato and Aristotle register in their work disappointment with Anaxagoras, instead of acknowledging the positive influence he had on them. I discuss the relevant evidence in the appendix to chapter 2.

of core issues in Plato's own system: how objects are qualified by properties, how objects relate to other objects (and Forms relate to other Forms), how necessity governs property possession, and how structure is 'embodied' in objects.

In chapters 4 and 5 I examine how Plato addresses the issue of how objects are qualified by properties: How can two or more objects have the very same property, if the property is not single and one? And how can a property be one, even if multiple objects have it? Studying Plato's approach to this issue will bring into relief how his thinking evolves 'in dialogue' with that of Anaxagoras. In chapter 4, I lay out some difficulties Plato raises (and the subsequent innovations he introduces) for the model of property possession by constitutional overlap in general, and in particular when combined with his theory of Forms. The analysis of such difficulties reveals to us how much Plato engages with Anaxagoras's thought (even without referring to Anaxagoras directly or by name). Further, the difficulties raised by Plato indicate which constraints and requirements the Anaxagorean model of constitutional overlap places on Plato's own theory of Forms. In a nutshell, the (formidable) metaphysical challenge that emerges for Plato is how a Form can have parts and yet be one, in the sense of being unique and incomposite. Plato rises to the challenge by breaking through new ground in mereology—the study of part-whole relations. I argue that one of Plato's most important breakthroughs consists in introducing in the history of metaphysics an account of what I call *logical fusion*, namely a type of mereological composition such that the resulting whole is one, made out of parts but having no parts. I show that conceiving of Forms as fusions is Plato's innovative solution to the difficulty of giving a metaphysical account of each Form as one *and* as having parts. I examine the difficulty and its solution in chapter 5, in the context of a broader investigation of the Forms' metaphysical complexity vis-à-vis their being *monoeides* and *homoeomers*.

In chapter 6 I argue that Plato offers us a thoroughly different way of conceiving of relations than the way we, post-Russellian philosophers, understand them. We (generally speaking) primitively assume that, whereas monadic properties (Fx), only qualify their subjects, polyadic properties, *aka* relations (xRy), somehow both qualify their relata and additionally relate them. How polyadic properties can perform

these two different metaphysical functions (in contrast to monadic properties, which perform only one function) is left unaccounted for in modern metaphysics. Plato does not make such a (metaphysically unjustifiable, I submit) assumption.⁶ Making a departure from the received scholarly view, I argue that Plato holds that Forms *only qualify* their partakers, and I show how they do so individually and plurally (through two different types of partaking in them). There is no metaphysical ‘mechanism’ by which the Forms could additionally relate their partakers to each other, nor did Plato assume there is one. My general interpretative proposal is that (pre-*Timaeus*) for Plato Forms qualify their partakers by overlapping constitutionally with them (as the Opposites do in Anaxagoras’s system). In examining the issue of relations, I argue that the key insight with which Plato enriches Anaxagoras’s model (and modern metaphysics, too) is that two or more sensible objects may overlap with a certain Form together, and only together, thereby coming to possess jointly a single part of that Form. This innovative conception of *plural partaking* eliminates the need to posit relations in the ontology, and yet it captures the interdependence of related entities. To illustrate: for Plato, stones of equal size and shape are not each equal *to* the other; they are equal *with* each other, in the way that you and I are two, not individually, but only *together*. That is to say, they are not related to one another by a relation of equality; rather, they are jointly qualified as equal, by sharing between them a part of the Forms of Equality/the Equals.⁷ Following this interpretative line, in chapter 6 I investigate how Plato extends and enriches Anaxagoras’s original model of constitutional overlap, by developing different types of overlap, which I call *joint-partaking* and *parallel-partaking*, to account respectively for what we call symmetric and asymmetric relations. Plato’s ontology is very parsimonious: for him, there are only ways the world is qualified; being related (in symmetric or asymmetric ways) is for Plato possessing a qualification jointly or in parallel with something else, which is cashed out in terms of the

⁶ Nor did Aristotle, for reasons sketched in Marmodoro and Yates (2016: 3–7).

⁷ Plato uses different expressions to refer to this Form, which is a metaphysically significant fact which we will examine in section 6.2.1 of chapter 6.

constitutional overlap of two or more objects together with the relevant properties.

Plato further discovers that some joint or parallel qualifications are *necessary* (e.g., being hot and being circular are necessarily different properties). However, since all types of qualification in his system (pre-*Timaeus*) are accounted for in terms of constitutional overlap, it follows for Plato, as I show in chapter 6, that overlap not only qualifies, but in some cases qualifies by necessity; that is to say, overlap regulates patterns of necessary co-qualification of entities (e.g., 3 and half-6 are necessarily co-qualified as equal). Plato reifies necessary qualification by introducing in the *Sophist* second-order Forms, the so-called *Great Kinds* (e.g., the Form of Sameness), and a different kind of overlap, which I call *permeation*. (At this point, Plato has thus enriched Anaxagoras's original model with three new types of overlap: *joint-partaking*, *parallel-partaking*, and *permeation*.) Interestingly, Plato does not develop his account of the Great Kinds further, beyond the *Sophist*. My conjecture is that he realizes that the Great Kinds introduce problems, just as much as they solve problems in his system; I illustrate some of the problems in chapter 6.

It is at this stage, I argue, that Plato realizes that *structure* has to play a role in his system, which it did not do in the hitherto parsimonious ontology of Forms of opposites, e.g., the Hot and the Just. Anaxagoras did not think that structure is a property; Plato does. Plato thinks of structure as a property, but of a type that is fundamentally different from the Forms of opposite properties. Opposite properties (e.g., the Hot) are uniform, while structures (e.g., the Triangular) are not, because structures are intrinsically complex. We saw that pre-*Timaeus*, for Plato, objects become qualified by opposite Forms by overlapping constitutionally with them; but, as Plato discovers, this model cannot be applied without qualification to the case of structural properties (that is, structural Forms in his system). Constitutional overlap can qualify objects with structural properties only if the Forms' parts are understood as operating *functionally*, and even so formidable difficulties still remain open, regarding the role of the parts and the uniformity of the Forms (discussed in the sections 4.8 of chapter 4 and 5.2 of chapter 5). At this point in his metaphysical development, Plato tries to address the issue of structure by running what we might call 'metaphysical

experiments'—one in the *Sophist* with the Great Kinds and one in the *Timaeus* with the *paradeigma*—which are not fully worked out metaphysical accounts, but pointers towards directions to explore further.

The transition from the Great Kinds to the *paradeigma* marks a fresh metaphysical start for Plato. The fundamental ontology changes, from being a system of *separate individual Forms* (before the *Sophist*); via becoming a system in which *Forms overlap* in new and complex ways with other Forms and with second-order Forms (in the *Sophist*); to being a system wherein there is a *single structured über-Form* that comprises all the Forms there are, the *paradeigma*. I argue that the so-called *paradeigma* Plato introduces in the *Timaeus* is the 'ontological successor' of the Great Kinds of the *Sophist*. But the *Timaeus* represents the starting point, not the end result, of Plato's rebuilding of his system—which he will never be able to complete. Notwithstanding its unfinished status, the *Timaeus* account is incredibly rich in metaphysical intuitions concerning how structure can do explanatory work in an ontology with no relations.

In the final part of the book, I investigate why and how Plato moves forward from the Anaxagorean position he has held throughout most of his metaphysical development, with respect to the metaphysics of participation. Before turning to that, a brief *résumé* of the overarching argument as sketched thus far might be helpful to the reader.

My argument is that overlap is at the core of both Anaxagoras's and Plato's systems, as a 'mechanism' that accounts for how a property is distributed to its participants/the objects that are qualified by it. For Anaxagoras, objects overlap constitutionally with properties; the properties are physical entities, like the Hot or the Dry, whose parts literally constitute objects. Plato is motivated to endorse Anaxagoras's model, because he finds it metaphysically explanatory—it provides an intuitive 'mechanism' for property distribution, and facilitates a parsimonious ontology, of Forms and sensible particulars (which, also, partly overlap with each other.) In Plato's system (pre-*Timaeus*) constitutional overlap between objects and Forms accounts for the objects' qualification, resemblance, for what we in modern metaphysics posit as relations, and further, for necessity. Thus, constitutional overlap is the fundamental metaphysical 'tool' for Plato, which he extends and enriches in ways that yield a number of metaphysical breakthroughs, at

least, as we will see, until he discovers insoluble difficulties with it that require a fresh start in the *Timaeus*.

Anaxagoras holds not only that parts of properties are parts of objects, but also that structure is likewise a constituent of objects. The Opposites and the seeds are for Anaxagoras physical entities that enter the constitutional make-up of objects. But while Anaxagoras reifies structure as seeds, Plato does not make provisions in his ontology for a different type of entity other than Forms of opposites (e.g., Hot, Just), for qualifying sensible particulars. Why not? My conjecture is that if types of structure are reified as Forms, sensible particulars cannot be/become qualified by them, because constitutional overlap does not allow for it;⁸ and yet, (pre-*Timaeus*) Plato hasn't endorsed any alternative 'mechanism' for property possession/acquisition other than constitutional overlap between objects and properties, and has no alternative way to reify types of structure in his ontology other than as Forms. I take this to be the reason why Plato does not reify structure in his (pre-*Timaeus*) ontology, but only tentatively, with the Form of Twoness, the Form of the Equals, and the Form of Bed, all of which will be discussed at length in what follows. This generates a very unsatisfactory *impasse* for Plato. However, when the Anaxagorean model of property distribution by constitutional overlap by parts collapses in the *Sophist*, Plato reassesses his position on structure, and once again addresses the difficulties that his theory faces with metaphysically creative innovations.

When Plato comes to see constitutional overlap by parts as an untenable account for how objects are qualified by properties, he endeavours to treat property qualification as due to *imitation* (which is metaphysically primitive), or later in his work through the operation of an ad hoc divine agent in the *Timaeus*, the so-called *Demiurge*.⁹ Metaphysically speaking, neither imitation nor the *Demiurge's* operations are as explanatory as the original Anaxagorean model with respect to property qualification in general. On the other hand, there is a specific but significant metaphysical gain to be had for Plato here: both

⁸ I explicate this point in chapter 5.

⁹ *Constitutional* overlap becomes now *qualitative* overlap; I differentiate the two types in section 4.1 of chapter 4, and in the later chapters.

imitation and the *Demiurge's* operations *can* account for the objects' possession of structure—e.g., an object comes to 'resemble' a triangle, or is 'crafted' as a triangle. In chapter 7, I articulate the metaphysical innovations that Plato introduces in the *Timaeus*, with respect to his theory of Forms and participation in the Forms, with special focus on the problem of structure; his (hitherto unacknowledged) solution to the *Third Man Argument*; and the additional developments in his metaphysics concerning how geometry and necessity enter the fabric of nature and govern it.

The conclusion of the book is forward-looking. The pathway from Anaxagoras's metaphysics to Aristotle's metaphysics, via Plato's, is through reconceiving structure from being a *physical entity* (Anaxagoras's seeds), to being a *transcendent property* (Plato's *paradeigma*), to being an *abstract entity* (Aristotle's substantial forms). Aristotle will learn two crucial metaphysical lessons from Plato: that structure is an abstract entity, to be treated as a property (neither of which Anaxagoras held); and that, nevertheless, objects do *not* become qualified by part-taking of structure as if it were an 'ordinary' property. How then do structures qualify objects? Aristotle needs to innovate metaphysically, in his turn, and he does: for him, I argue, structure has a double metaphysical role: it serves as *subject* of a substance's properties, and as *essence* qualifying that substance; so, for example, Socrates is essentially structured as a human being, and his structure, which organizes him as 'human being', is also the subject of Socrates' properties. This is the crux of Aristotle's metaphysics of objects, and as such, it has been greatly interesting as well as greatly challenging to scholars and metaphysicians alike—and it remains vigorously debated today in the current resurgence of 'neo-Aristotelian' metaphysics.¹⁰

Before concluding this introduction, now that the overarching thesis of the book and its contents have been laid out, a note on the

¹⁰ I do not expand on Aristotle's theory of substance in the book, to keep to its main argument, but the reader who might want to learn more about the interpretation I argue for in relation to Aristotle's hylomorphism, might be interested in one or more of the set of papers where I develop it, which include: Marmodoro (2013, 2020, and 'Instantiation', unpublished manuscript).

book's aims and methodology is in order.¹¹ This book is a piece of revisionary philosophical historiography, tracing and revealing the development of an internally coherent metaphysics¹² from a series of Platonic passages, most of them already widely discussed, but a few of them tellingly somewhat neglected by the mainstream. In thus defamiliarizing Plato's metaphysics as we know it, and redrawing the map of its affinities with his predecessors and successors alike (in particular, Anaxagoras and Aristotle), the book aims to motivate fresh interest in Plato's thought, both from metaphysicians and historians of metaphysics.

The reader might wonder whether this is a book about *Plato's metaphysics* or about a modern-day development of a *Platonic metaphysical theory*. My answer is that the book aims at contributing to a fuller and deeper understanding of *Plato's* metaphysics, which can be achieved only by 'closing the gap' that exists between him and us. In other words, I believe that we can access Plato's philosophical thought only by means of building bridges between where we, philosophers of today, stand, and where Plato stands, within the philosophical *milieu* of his time. Further, in reconstructing Plato's thought as I interpret it, I built on the hints and clues of explanatory insight that we can find embedded in the very complex structure of Plato's arguments. This overall approach goes beyond accessing Plato's thought, in the sense that it also aims at bringing it to bear as potentially fruitful on philosophical questions that engage us today.

With regard to its methodology, this book aims to discuss Plato's metaphysics, and in so doing it focuses primarily on the arguments that underpin his thinking, subordinating to that goal (or sidelining, one might say) attention to the dialogical form of the texts, as of mainly stylistic rather than philosophical interest. I select and concentrate on stretches of argument from different dialogues, on account of their being relevant to how Plato develops his metaphysical thinking and

¹¹ I am grateful to the Press's anonymous readers for their helpful comments concerning how to present the approach I take to Plato's metaphysics; I borrowed their words here.

¹² By radically different I mean here different from how Plato's metaphysics is traditionally interpreted, but also different from any other metaphysical theory that has been 'mapped out' so far.

to how they can enable us to gain a richer understanding of Plato's thought, irrespectively of who is speaking in the dialogue and in what dialectical context, across dialogues and periods. These are methodological choices, motivated by my goal of bringing the overarching line of Plato's thought into relief, so that others may continue to explore it further.

1

Anaxagoras's metaphysical foundations

1.1. Introduction

Structure is to be found everywhere in the universe; it is an ineliminable feature of the world and of our understanding of it. But what is structure, metaphysically? For Anaxagoras, structure is *not* a property of things in the world. He does not argue for this stance, nor does he mention it explicitly in the extant texts, but from his explicit philosophical commitments it follows that all properties in his ontology are *qualitatively uniform*.¹ Such properties are the so-called Opposites, like the Hot and the Cold, the Wet and the Dry, etc. To express the idea that they are qualitatively uniform in modern essentialist terms, we could say that all there is to the nature of, e.g., the Opposite Hot is being hot; and the same for the other Opposites. They are also internally unstructured, in the sense that, on account of their qualitative uniformity, there is no internal differentiation in them, and therefore no ground for structure. Anaxagoras's Opposites exist as *unlimitedly divided in parts or shares*, but each of the parts is qualitatively the same as the whole of which it is a part (so their gunky structure, which is the only structure the Opposites have, is uniform throughout each Opposite).² (Aristotle spoke of this kind of uniformity succinctly, by coining a term for it, *homoeomers*, and describing Anaxagoras's Opposites as *homoeomers*, in *Physics* 203a19.)

So, if structure is not a property, but nevertheless exists in reality and needs to be metaphysically explained, what is Anaxagoras's solution? He reifies structure in his ontology: he adds to his ontology

¹ Even if they are gunky, as we will see in section 1.5.

² I argue for this interpretation in section 1.5.

individual structures, the so-called *seeds*; as primitive in the ontology as the Opposites, but irreducible to them. The seeds serve as miniature physical frames around which the Opposites cluster in organized ways. Thus, Anaxagoras introduces in his ontology two different types of building blocks to account for how things are in nature: the Opposites and the seeds—the former constituting stuffs, such as earth or flesh; and the latter constituting (along with the Opposites) structured entities, e.g., organisms, such as human beings. Not all structure in nature can however be explained through the individual structures the seeds provide. Anaxagoras is aware of this, and complements his account by introducing in his system further entities: *nous* and a cosmic vortex. *Nous* is a power of intelligence, which generates the vortex that makes the Opposites move around. The combined effect of *nous* and the vortex results in the formation of what I call *meta-structures* in nature, namely, structures of structures, such as a forest of trees.

Anaxagoras's complex solution (involving seeds, *nous*, and the vortex) shows acute awareness of the problem of structure, and ingenious thinking on his part to address it. Ultimately however, the problem is solved by adding primitives to the ontology; and further, Anaxagoras leaves us with a rather incomplete account of the nature and *modus operandi* of *nous*, which both Plato and Aristotle explicitly criticize.³ In this and the next chapter, I will introduce the fundamental tenets of Anaxagoras's metaphysics that are relevant to our investigation of the problem of structure.⁴

1.2. What there is

In the extant fragments we find an indicative, even if not exhaustive list of what Anaxagoras's world includes. Here I introduce what there is, and the 'mechanisms' by which what there is composes, in Anaxagoras's system. According to fragment B4b, at a primordial stage

³ See Plato's *Phaedo* 97c–98c and Aristotle's *Metaphysics* 985a11–20, which I will examine in the appendix to chapter 2.

⁴ For a fuller discussion of Anaxagoras's metaphysics including scholarly interpretations alternative to mine, I refer to Marmodoro (2017b).

in the history of the universe, there exist the Opposites (e.g., the Wet and the Dry, the Hot and the Cold, the Bright and the Dark); stuffs (e.g., earth); and the so-called seeds (whose nature we will investigate in section 2.4 of chapter 2). All these items exist in a state of extreme mixture (in a state that elsewhere Anaxagoras describes in terms of 'everything in everything'; see B1, B6, B11, and B12):⁵

Before there was separation off, because all things were together, there was not even any colour evident; for the mixture of all things prevented it, of the wet and the dry and of the hot and the cold and of the bright and the dark, and there was much earth present and seeds unlimited in number, in no way similar to one another. Since these things are so, it is right to think that all things were present in the whole.

πρὶν δὲ ἀποκριθῆναι [ταῦτα] πάντων ὁμοῦ ἐόντων οὐδὲ χροὶ ἔνδηλος ἦν οὐδεμία· ἀπεκώλυε γὰρ ἡ σύμμιξις πάντων χρημάτων, τοῦ τε διεροῦ καὶ τοῦ ξηροῦ καὶ τοῦ θερμοῦ καὶ τοῦ ψυχροῦ καὶ τοῦ λαμπροῦ καὶ τοῦ ζοφεροῦ, καὶ γῆς πολλῆς ἐνεούσης καὶ σπερμάτων ἀπείρων πλῆθος οὐδὲν ἐοικότων ἀλλήλοις. οὐδὲ γὰρ τῶν ἄλλων οὐδὲν ἔοικε τὸ ἕτερον τῷ ἑτέρῳ. τούτων δὲ οὕτως ἐχόντων ἐν τῷ σύμπαντι χρὴ δοκεῖν ἐνεῖναι πάντα χρήματα.

Additionally, there is, in Anaxagoras's system, but not mixed with anything else, *nous*, which is mentioned in several fragments; for example, in B14 we read that,

Nous, which always is, most assuredly is even now where all the things also are, in the surrounding multitude, and in the things that were joined together and in the things that have been separated off.

ὁ δὲ νοῦς, ὃς αἰεὶ ἐστι, τὸ κάρτα καὶ νῦν ἐστιν ἵνα καὶ τὰ ἄλλα πάντα, ἐν τῷ πολλῷ περιέχοντι καὶ ἐν τοῖς προσκριθείσι καὶ ἐν τοῖς ἀποκεκριμένοις.

⁵ The quotations and translations of Anaxagoras's texts here provided, unless otherwise specified, are from Curd (2007).

From B13 we learn more about the role of *nous*. In essence, *nous* is the generator of spatial movement in the universe—the spatial movement that is responsible for the dissociation and reshuffling of the Opposites mentioned in B4b:

When *Nous* began to move [things], there was separation off from the multitude that was being moved, and whatever *Nous* moved, all this was dissociated; and as things were being moved and dissociated, the revolution made them dissociate much more.

καὶ ἐπεὶ ἤρξατο ὁ νοῦς κινεῖν, ἀπὸ τοῦ κινουμένου παντὸς ἀπεκρίνετο, καὶ ὅσον ἐκίνησεν ὁ νοῦς, πᾶν τοῦτο διεκρίθη· κινουμένων δὲ καὶ διακρινομένων ἢ περιχώρησις πολλῶ μᾶλλον ἐποίει διακρίνεσθαι.

From other fragments, we find out about the nature of *nous* and about its most distinctive feature, which sets it apart from everything else, and is relevant to its operations: *nous* is the only type of entity that is not mixed with any other type of entity. Anaxagoras states in B11 that 'In everything there is a share of everything except *Nous*' (ἐν παντὶ παντὸς μοῖρα ἔνεστι πλὴν νοῦ, ἔστιν οἷσι δὲ καὶ νοῦς ἐν). This claim is repeated, for instance, in B12: 'The other things have a share of everything, but *Nous* is [. . .] has been mixed with no thing, but is alone itself by itself' (τὰ μὲν ἄλλα παντὸς μοῖραν μετέχει [. . .] ἀλλὰ μόνος αὐτὸς ἐφ' ἑαυτοῦ ἐστιν).

The shuffling around of the Opposites and the seeds, by means of a cosmic vortex started by *nous*, gives rise to the ordinary objects of our experience, as we know, for example, from B4a, which mentions human beings, other animals, plants, artefacts, households, cities, and heavenly bodies:

For shortly after the beginning of the first book of his *Physics*, Anaxagoras says this, 'Since these things are so, it is right to think that there are many different things present in everything that is being combined, and seeds of all things, having all sorts of forms, colours, and flavours, and that human and also the other animals were compounded, as many as have soul. Also that there are cities that have been constructed by humans and worlds made, just as with

us, and that there are a sun and a moon and other heavenly bodies for them, just as with us, and the earth grows many different things for them, the most valuable of which they gather together into their household and use [. . .]'

λέγει γὰρ μετ' ὀλίγα τῆς ἀρχῆς τοῦ πρώτου Περὶ φύσεως Ἀναξαγόρας οὕτως· τούτων δὲ οὕτως ἔχόντων χρὴ δοκεῖν ἐνεῖναι πολλά τε καὶ παντοῖα ἐν πᾶσι τοῖς συγκρινομένοις καὶ σπέρματα πάντων χρημάτων καὶ ιδέας παντοίας ἔχοντα καὶ χροιάς καὶ ἡδονάς, καὶ ἀνθρώπους τε συμπαγῆναι καὶ τὰ ἄλλα ζῶα ὅσα ψυχὴν ἔχει. καὶ τοῖς γε ἀνθρώποισιν εἶναι καὶ πόλεις συνημμένες καὶ ἔργα κατεσκευασμένα, ὥσπερ παρ' ἡμῖν, καὶ ἡέλιόν τε αὐτοῖσιν εἶναι καὶ σελήνην καὶ τὰ ἄλλα, ὥσπερ παρ' ἡμῖν, καὶ τὴν γῆν αὐτοῖσι φύειν πολλά τε καὶ παντοῖα, ὧν ἐκεῖνοι τὰ ὄνηστα συνενεγκάμενοι εἰς τὴν οἰκῆσιν χρῶνται [. . .]

The nature of each of these types of entity which comprise the furniture of Anaxagoras's universe, and the modality of their composition need to be examined. But first, I will focus on the issue of whether any of the items that figure in this preliminary sketch of Anaxagoras's system is metaphysically reducible to any of the others; namely, of whether any of them is derivative (by composition) from others. Addressing this question will enable us to determine whether some types of entities are fundamental for Anaxagoras, and which ones these may be. Once established that some entities are fundamental and some derivative, I will argue that Anaxagoras conceives of composition in terms of *bundling*: composite things are for him clusters of fundamental elements, and nothing 'over and above' them.⁶ I will also show that Anaxagoras admits in his ontology both unstructured and structured bundles, for the latter of which the seeds provide structure.

There is general agreement among scholars that Anaxagoras's Opposites are metaphysically irreducible—they don't derive from anything else more primitive than themselves; hence we can concentrate here on the more controversial status of stuffs, seeds, *nous*, and

⁶ I refer to section 2.3 of chapter 2 for a fuller explanation of bundling.

whatever else furnishes Anaxagoras's world.⁷ Fragment B15 is relevant here:

The dense and the wet and the cold and the dark come together here,
where <the> earth is now; but the rare and the hot and the dry <and
the bright> moved out to the far reaches of aether.

τὸ μὲν πυκνὸν καὶ διερὸν καὶ ψυχρὸν καὶ τὸ ζοφερόν ἐνθάδε συνεχ
ώρησεν, ἔνθα νῦν <ή> γῆ, τὸ δὲ ἀραιὸν καὶ τὸ θερμὸν καὶ τὸ ξηρὸν
ἐξεχώρησεν εἰς τὸ πρὸσω τοῦ αἰθέρος.

Taking earth as an example of stuff, and assuming that the same will apply *mutatis mutandis* to all kinds of stuffs, B15 indicates that for Anaxagoras stuffs are metaphysically reducible to the Opposites. It is the moving about and aggregation of certain Opposites that makes, e.g., earth come to be.⁸

⁷ Scholars have taken different views on the issue of what is fundamental in Anaxagoras's system. Curd (2007: 153ff) offers a helpful summary of the positions in the debate and of the arguments from all sides. Those who think the Opposites only are fundamental include, for instance: Tannery (1886), Burnet (1892 and 1930), Vlastos (1950), Schofield (1980), Sedley (2007), and Warren (2007). I report here some representative quotations. Schofield thinks that substances and stuffs in Anaxagoras's system are 'logical constructions out of opposites' (1980: 116). On the same line, Inwood (1986: 25–6, footnote 29): 'My own view [is] that the ἔοντα χρήματα (i.e. the elemental entities which alone obey Parmenidean rules of permanence) are only the opposites and that everything else, the so-called Empedoclean elements, and flesh, bone etc. is derivative and disobedient to Parmenidean rules of permanence'; such derivative entities 'are only "virtually" present in the mixture . . . [that is to say] the opposites needed to make them up are present' (1986: 25). In contrast with this, there is a line of interpretation that considers stuffs irreducible; on this view, stuffs such as blood or gold are not composed out of the Opposites, but exist primitively as such (see, e.g., Graham (2004)). Other views, of variable ontological 'generosity', are held, for instance, by Guthrie (1965) Barnes (1982); Mourelatos (1986); Furth (1991); Graham (2004), Curd (2007), and others. Barnes, for instance, writes: 'Specific talk of the opposites may be dropped from the discussion of Anaxagoras' theory of nature' (1979: 18 vol. 2). Similarly, Reeve '[. . .] any obsession with opposites we seem to find in Anaxagoras is the obsession of his predecessors not his own' (1981: 96). We thus have a full spectrum of views in the literature.

⁸ The issue of 'generation' of stuffs is in fact more complex than this. Briefly here (with a fuller discussion in sections 2.2 and 2.3 of chapter 2), stuffs such as earth or flesh only appear, phenomenologically, to be of such kinds, while ontologically they are aggregates of Opposites in different densities. But the mere compresence of the relevant Opposites in an aggregate does not suffice for us to discern earth in a certain location, even though it is only their compresence that is needed for the composition of earth. The difference lies between compresent relevant Opposites of low strength or intensity, and compresent relevant Opposites of high strength or intensity, where 'high' means 'perceptible.' So it is

We already saw that in the inventory of what there is in Anaxagoras's world there are seeds too. The seeds have been the focus of much controversy among scholars; here I will limit myself to discussing only whether the seeds are primitive or derivative in Anaxagoras's ontology.⁹ In B10 we read that,

For in the same seminal fluid there are hair, nails, veins and arteries, sinew, and bone, and it happens that they are imperceptible because of the smallness of the parts, but when they grow, they gradually are separated off. 'For how', he says, 'can hair come from what is not hair and flesh from what is not flesh?'

καὶ γὰρ ἐν τῇ αὐτῇ γονῇ καὶ τρίχας εἶναι καὶ ὄνυχας καὶ φλέβας καὶ ἄρτηρίας καὶ νεῦρα καὶ ὅσῃ καὶ τυγχάνειν μὲν ἀφανῇ διὰ μικρομέρειαν, αὐξανόμενα δὲ κατὰ μικρὸν διακρίνεσθαι. πῶς γὰρ ἂν, φησὶν, ἐκ μὴ τριχὸς γένοιτο θρίξ καὶ σὰρξ ἐκ μὴ σαρκός;

Assuming for present purposes that the animal seed is an instance of what Anaxagoras means when talking of seeds in general, what we learn from B10 is that the seeds are made out of stuffs, such as nail, hair, bone, etc. But stuffs are made out of Opposites. Thus, neither stuffs nor seeds are fundamental, for they are composed from Opposites and thus derivative from them. On the other hand, the seeds are not exhaustively reducible to Opposites only, because they are primitively structured.¹⁰

Also metaphysically irreducible to the Opposites is *nous*. Due to the constraints determined by what it is posited to do, *nous* cannot be the result of composition of Opposites. In B12 we find clearly stated that,

only when the compresent relevant Opposites are intense enough to be perceptible, that we can recognize and classify their aggregative composition as earth.

⁹ I will postpone to section 2.4 of chapter 2 further questions concerning the seeds.

¹⁰ On account of the metaphysical role the seeds are posited to have, their being structured has to be a primitive in the system, else a regress would ensue if something else were to give them structure.

[. . .] The other things have a share of everything, but *Nous* [. . .] has been mixed with no thing, but is alone itself by itself. For if it were not by itself but had been mixed with anything else, then it would partake of all things, if it had been mixed with anything [. . .]; and the things mixed together with it would thwart it, so that it would control none of the things in the way that it in fact does, being alone by itself.¹¹

τὰ μὲν ἄλλα παντὸς μοῖραν μετέχει [. . .] καὶ μέμικται οὐδενὶ χρήματι, ἀλλὰ μόνος αὐτὸς ἐφ' ἑαυτοῦ ἐστίν. εἰ μὴ γὰρ ἐφ' ἑαυτοῦ ἦν, ἀλλὰ τεφ ἐμέμικτο ἄλλω, μετείχεν ἂν ἀπάντων χρημάτων, εἰ ἐμέμικτό τεφ [. . .]· καὶ ἂν ἐκώλυεν αὐτὸν τὰ συμμεμιγμένα, ὥστε μηδενὸς χρήματος κρατεῖν ὁμοίως ὡς καὶ μόνον ἔοντα ἐφ' ἑαυτοῦ.

In conclusion, we saw that the Opposites compose in various ways to make up what there is in Anaxagoras's system. They compose because moved spatially by *nous*. *Nous*, on the other hand, is a unique type of entity: it is a primitive in the system, namely it is not further analysable, partly or fully, in terms of anything else. We will investigate the ways the opposites compose in more detail in chapter 2. Next, we will examine the nature of the Opposites.

1.3. Opposite properties and their causal efficacy

There is a long-established exegetical tradition that takes Anaxagoras's Opposites to be *powers*.¹² Gregory Vlastos is the most significant exponent of that tradition; he writes that,

¹¹ This is a fascinating argument to which I will not be able to pay justice here; I will only mention that the argument is based on nothing more than what we might call a philosophical intuition. The intuition is expressed in Anaxagoras's stance that it is *nous*' radical difference, ontologically, from things in nature that enables it to have power over them. No reason is given (at least in the extant texts). We, readers of Anaxagoras and of his successors, know that Plato's Form of the Good has also *sui generis* powers of causation over nature, and Aristotle's unmoved mover too; but this is not a research thread that I can pursue further here. I return to Anaxagoras's *nous* in section 2.6 of chapter 2.

¹² See, among others, Tannery (1886: 280ff.), Burnet (1892: 288–90, and 1930: 263–4), Vlastos (1950: 41–2), Schofield (1980: 120).

[T]he most important step ever taken toward the true understanding of Anaxagoras, was made by Tannery's suggestion that the ultimate ingredients [. . .] are the hot and the cold, the dry and the moist, and all the traditional 'opposites' of Ionian cosmology. These are conceived [. . .] as substantial 'quality-things' or, better still, *as forms of energy or 'power' (dynamis)*. (1950: 41–42, my emphasis)

Thinking of the Opposites as powers is indeed a promising direction; I share Vlastos's thought. He finds ground for his interpretation in the existing intellectual continuity between Anaxagoras's views and the Ionian cosmologies that preceded them.¹³ There is historical plausibility in this suggestion; but I want to make the case more cogent by adding the following consideration of my own: given that the Opposites are not metaphysically reducible to anything else from which they could derive their causal efficacy (as we saw in section 1.2), and given that there is no other source of causal efficacy external to them that acts at the 'local' level in the world,¹⁴ there is strong metaphysical motivation to understand them as (what we call) *causal powers*.¹⁵

There are, however, important issues to investigate, which neither Vlastos nor others have raised, in relation to the hypothesis that the Opposites are causal powers. On the one hand, there are indications in the extant texts that Anaxagoras's Opposites have causal efficacy with respect to change—they make things happen.¹⁶ Movement, which results from the vortex and ultimately from *nous*, does not explain all

¹³ Vlastos writes, "That Anaxagoras shared the traditional view of the "powers" is a reasonable assumption, and this not in spite but because of the scantiness of our notices on this topic. Had he deviated in any significant way, some trace of the innovation would have been left in the record" (1950: 43).

¹⁴ *Nous*, and the vortex it generates, are causal agents at a cosmic level.

¹⁵ The word *dynamis* does not appear in the extant fragments, but this should not be thought of as a difficulty, because of the scarcity of the surviving texts, and more generally because we cannot expect at this stage of development of the history of philosophy an already codified terminology for metaphysics. Relatedly, Sedley (2007: 15) argues that it is too early in the history of philosophy to think that Anaxagoras introduced technical terms for his philosophical ideas. (I raise the same points concerning the seeds, in section 2.4. of chapter 2.)

¹⁶ E.g., in B16 we read 'From the earth, stones are compacted by the cold' (ἐκ δὲ τῆς γῆς λίθοι συμπιγνυνται ὑπὸ τοῦ ψυχροῦ), giving Cold the power to move the earth. We will return to this fragment later in this section.

the ongoing causal happenings in nature; the Opposites have their own causal role to play, too. This gives us strong motivation to understand them as causal powers. On the other hand, we cannot attribute to Anaxagoras a conception of the causal efficacy of the Opposites that runs contrary to his adherence to Parmenides' view (against creation, destruction, and qualitative change), which is very well attested in B5, B10, and B13, among other fragments; B10, for instance, says:

When Anaxagoras discovered the old belief that nothing comes from that which is not in any way whatsoever, he did away with coming-to-be and introduced dissociation in place of coming-to-be.

ὁ δὲ Ἀναξαγόρας παλαιὸν εὐρὼν δόγμα ὅτι οὐδὲν ἐκ τοῦ μηδαμῇ
<μηδαμῶς ὄντος> γίνεται, γένεσιν μὲν ἀνῆρει, διάκρισιν δὲ εἰσῆγεν
ἀντὶ γενέσεως.

To establish the interpretative claim that Anaxagoras's Opposites are causal powers, one needs to set out what the criteria (or our criteria) are for something to be a power, and examine whether the Opposites meet them. In general terms, we take causal powers to be types of properties defined by the type of change they enable their possessor to suffer or bring about. For instance, magnetism is the capacity to attract certain metals.¹⁷ Causal powers get exercised; and in so doing they change the causal profile of the world, either by changing (intransitively), or by changing (transitively) something else, or both. There are two influential ways of thinking about the causal efficacy of powers that are relevant to the present discussion: the one is of Aristotelian descent, and the other has been put forward in contemporary metaphysics in recent years.¹⁸ It is important to introduce them in order to examine

¹⁷ If one wanted to pursue further readings on causal powers, some representative milestones in the current debates are: Molnar (2003), Mumford (2003), Bird (2007), Mumford and Anjum (2011), McKittrick (2018), Williams (2019). Of general interest is also J. Jorati (ed.), *Powers. A History* (Oxford Philosophical Concepts Series), 2021. For present purposes I do not draw any distinction between powers and dispositions; some metaphysicians do, e.g., Bird (2013).

¹⁸ It is not anachronistic to open up a theoretical possibility for thinking of Anaxagoras Opposites on the basis of current research in metaphysics. The goal is to understand Anaxagoras in his own terms, but as we approach him from our

whether Anaxagoras's Opposites align with either of these two mainstream conceptions of powers and causal efficacy; and if not, to introduce what is distinctive about Anaxagorean powers. In what follows I will argue that Anaxagoras does not think of the Opposites as causal powers in either of the two post-Aristotelian ways we are familiar with. Rather, his conception of them is like Plato's, as we will see in chapter 3.

To begin with Aristotle's (still influential today) conception of powers, on his view, when a power is being causally efficacious, two things obtain. The power is activated, namely it undergoes a transition from the state of potentiality to the state of actuality and thus changes (intransitively); additionally, the power changes (transitively) something else. For example, *x*'s power to heat gets activated and heats up something colder, which thereby changes by being heated. While the change from potentiality to actuality (activation), as Aristotle tells us in the *Physics*, is not a 'proper' change, and only the transitive one is, most power interactions are mutual, with partner powers, where both powers change each other.¹⁹ For instance, a hot stone put in cold water warms up the water, which, in turn, cools the stone; both change each other qualitatively in their interaction. Since Anaxagoras does not allow for qualitative change in his system (for Parmenidean reasons), it is evident that he cannot admit that powers change, transitively (or even intransitively)—as Aristotelian powers do when being causally interactive.

There is on the other hand an alternative conception of powers, held in current metaphysics, which might be thought to be a helpful model for understanding how Anaxagoras thinks of powers. According to the alternative conception, powers exist in potentiality, and their manifestation is the production of a new, different power (also in potentiality); for example, the fragility of a glass is manifested in the new powers of the fractured glass that come about.²⁰ Mumford and Anjum, for instance, who hold this view, claim that 'causation happens when

contemporary standpoint, we need to be able to understand what is different between his way of thinking of causal powers and ours, and this is why introducing ours is relevant.

¹⁹ See *Physics*, V.1, 225a34–b5. Cp. similarly *De Anima* II.5, 417b2–9.

²⁰ This approach does not distinguish between a power's being exercised and a power's being manifested.

powers do their work' (2011: 30); the work of a power is 'producing its own manifestation' (2011: 8). So causal powers are exercised when they produce their manifestation. But if a power and its manifestation are related as producer and product, the manifestation of a power is a numerically different power from the original power itself, and it is something the power is in fact causally related to. Confirmation that Mumford and Anjum think of the manifestation of a power as something numerically different from the power itself comes from their explanation that 'the manifestation of a power will [...] be itself a *further power* or cluster of powers' (2011: 5, my emphasis). On their model, the manifestation of a power consists in its replacement with a new one. This new power is real, but unmanifested (until it gets together with its own manifestation partner, and produces a further power, etc.). On this model, the powers themselves do not change state (from potentiality to actuality); rather, the view calls for new powers that come to be when the original ones manifest. But this ceasing to be and coming to be of powers runs contrary to the Parmenidean stance against change; thus, this second conception of powers cannot be attributed to Anaxagoras either. So, in which way, if any, are Anaxagoras's Opposites causally efficacious?

I submit that before Aristotle, powers were thought to have a difference-making role, by making (what I call) a *constitutional* difference to their bearer, changing it by their presence in it. It was only Aristotle that first conceived that powers make (what I call) an *operational* difference in their environment, changing qualitatively something other than their bearer. Before Aristotle, philosophers had no doubt empirical evidence that some things affect others, e.g., fire heats its environment; but they did not have a metaphysical 'mechanism' by which to explain such interaction. Anaxagoras's (and Plato's) conception of powers aligns with this general pre-Aristotelian way of thinking. I argue that Aristotle was the first in the history of metaphysics to propose that powers can bring about operational as well as constitutional changes in the environment. Aristotle distinguishes between two states of a power: in potentiality, and activated/exercising. A power for him can make a constitutional difference to its bearer, depending on its being in potentiality or activated; but it cannot make an operational difference on anything unless it is activated. Aristotle

thereby introduces *qualitative change* (from potentiality to actuality), which had been banned by Parmenides, and which is not reducible to rearrangement of elements. In what follows, I will address first the issue of whether and how the distinction between potentiality and actuality applies, if in any way at all, to Anaxagoras's powers; and second, what type of causal efficacy his powers have.

In Anaxagoras's extant texts we find descriptions of active powers, but there are no descriptions of the state of inactivity of powers, and it is plausible to assume that the conceptual distinction between active and inactive powers is not present in his system.²¹ By contrast, it is by and large assumed in modern metaphysics (and already by Aristotle) that powers need not be exercised at all times. Rather, they exist even when in an inactive state, and in fact they may exist without ever being exercised. The exercise of causal powers requires appropriate conditions; if/when such conditions do not obtain, the relevant powers remain 'dormant'. Anaxagoras's views differ from these, for his powers are always active.²² Nevertheless, Anaxagoras appears to distinguish between the *presence* and the *manifestation* of a power. Powers in Anaxagoras's system are always present, but not manifest at all times. They become manifest specifically when their presence becomes perceivable; namely, when an Opposite comes to be preponderant (*modulo* perception) in some spatiotemporal location over other Opposites, 'change' occurs. In this connection, one may think of an object, before the Hot comes to predominate in it, as being potentially

²¹ Such a distinction had not been conceptualized yet. Plato will sketch it in the *Theaetetus*, and Aristotle will develop it in his metaphysics. Plato distinguishes, in the case of knowledge, between having it and possessing it, by analogy with the difference between having and possessing a coat, where the former is understood as wearing it; and that between possessing birds in a cage, and having the power to catch them and let them go at will (see the *Aviary Simile* in the *Theaetetus*, 197a8–d3). For more on this issue, see, among others, Stephen Menn (1984: 81), and David Bradshaw (2004, chapter 1). We will return to these issues, in relation to Plato's conception of powers, in chapter 3.

²² Alexander Mourelatos aptly remarks in general terms about Parmenides's immediate successors that,

It is important to note that when the Pluralists speak of a *dynamis* or 'power' present in a fundamental constituent, they must be taken to imply a power that is continuously, even eternally manifest; nothing like the Aristotelian scheme of potencies that are triggered into actualities can be presupposed; nothing like Aristotelian qualitative alteration or qualitative interaction can be envisaged. (1986: 134–5)

hot, and after it comes to predominate in it, as actually hot.²³ However, to be clear, for Anaxagoras, this involves only movement of shares of the (always active) Opposite Hot. Further, on account of the fact that Anaxagoras does not want to introduce processes of qualitative change in his system, for Parmenidean reasons, he does not allow for physical activities in the universe other than spatial movement. In consequence, he does not have a metaphysics of *interaction* among physical powers, in contrast with Aristotle.

Now, on to the type of causal efficacy Anaxagorean powers have: they have a constitutional causal role; however, Anaxagoras, as we will see, shows signs of at least envisaging (presumably, purely on empirical grounds) an (unexplainable) operational causal role, too, for his Opposites. We saw that the Opposites exhibit their (different kinds of) natures when their shares are present in preponderance in a certain region of the universe. This is a conception of causal efficacy that does not involve any change or activation of the powers themselves, but only their accumulation. The Opposites come to be preponderant in certain regions of the universe because of external factors operating on them (i.e., moved by the vortex that was started off by *nous*) and redistributing them in space, as we read for instance in B13,

When *Nous* began to move [things], there was separation off from the multitude that was being moved, and whatever *nous* moved, all this was dissociated; and as things were being moved and dissociated, the revolution made them dissociate much more.

καὶ ἐπεὶ ἤρξατο ὁ νοῦς κινεῖν, ἀπὸ τοῦ κινουμένου παντὸς ἀπεκρίνετο, καὶ ὅσον ἐκίνησεν ὁ νοῦς, πᾶν τοῦτο διεκρίθη· κινουμένων δὲ καὶ διακρινόμενων ἡ περιχώρησις πολλῶ μᾶλλον ἐποίει διακρίνεσθαι.

Thus, Anaxagoras conceives of causation, in the sense of something making a *qualitative* difference to its environment (e.g., making something else hotter), in terms of *quantitative* transmission (by

²³ We will return to these issues in section 2.2 of chapter 2.

spatial movement) of shares of the relevant Opposites (e.g., the Hot). Causation happens by power transference. There is however one special case of causal efficacy described in Anaxagoras's extant texts, which I want to consider here in some detail, before reaching the conclusion of this section. In B16 Anaxagoras claims that 'From the earth, stones are compacted by the cold' (ἐκ δὲ τῆς γῆς λίθοι συμπίγνυνται ὑπὸ τοῦ ψυχροῦ). A question that might arise for the reader is whether this fragment describes an instance of (Aristotelian) efficient causation. In a sense it does; in a sense it does not. It alludes to the efficient action of the Cold on the earth; however the earth's change is described not as a qualitative change (in temperature),²⁴ but as a rearrangement (of the earth's parts). My understanding of Anaxagoras's example in B16 is that the shares of the Cold bring about the *compacting* of the shares of earth; this is physical rearrangement, not a qualitative change (since Anaxagoras complies with the Parmenidean strictures on change), making the shares of earth come spatially closer to each other and thus become stones. However, the shares of the Cold cannot move the shares of the earth, since they do not have movement of their own, so as to initiate further movement. Only the vortex can move shares of the Opposites that make up everything in nature. In conclusion, what the shares of the Cold do, in B16, is have an effect on earth that is spatial movement; but how they do it (if they do it on their own, rather the vortex) is not explainable in Anaxagoras's system, wherein the Opposites are not Aristotelian efficient causes.

To conclude this section, on the interpretation I am motivating, Anaxagoras's Opposites are causally efficacious, even if in a different way than what we (as post-Aristotelians) might expect. Anaxagoras's

²⁴ From Anaxagoras's metaphysical commitments, it follows that things in his world do not have strictly speaking a temperature that may be altered qualitatively, becoming hotter or colder; having a certain temperature amounts, in his system, to having a certain quantity of shares of Hot in relation to a certain quantity of shares of Cold in that thing. To draw a contrast for further explication of this point: in Anaxagoras's system, properties are constituents of objects, whilst they aren't in Aristotle's system. So, when the temperature drops in the lump of earth, for Anaxagoras, the lump loses shares of Cold, whilst for Aristotle, the lump's properties change qualitatively. For Anaxagoras the shares of Cold in the lump that become fewer; for Aristotle, the lump that gets cooler.

Opposites are powers which bring about *constitutional change* in objects, and make things be of the kind their predominant Opposites are. However, this conception of causal efficacy does not admit that an Opposite can affect causally the nature of another Opposite. A cold object may become hot near a fire, but no share of the Cold in Anaxagoras's universe ever becomes other than it is; the Opposites only agglomerate or disperse.

1.4. Like causes like

Anaxagoras's conception of how the Opposites are causally efficacious reveals to us a more general idea that was widespread in antiquity, and not unique to Anaxagoras. I call it the *Contagion Principle* of causation.²⁵ The principle captures the thought that x causes y to be like x itself (with respect to f -ness); or, x , which is itself f , is the 'source' of y 's f -ness. The *Contagion Principle* of causation is usually held in antiquity (and by Anaxagoras too) in conjunction with a further principle, the *One Over Many Principle*. In its most generic formulation, the *One Over Many Principle* posits that the qualitative similarity between two or more items is explained by a single 'source' of that qualification.²⁶ The *Contagion Principle* can be thought of as a 'mechanism' for the *One Over Many Principle*, namely a 'mechanism' for how a source can make things be similar: each thing acquires the condition of being f from the source; and all things have the same condition of f -ness because they acquire it from the same single source (assuming that the source is uniformly f). Two clarifications are in place here: first, all that the *Contagion Principle* requires, in its most general formulation, is the

²⁵ Many in the history of philosophy have discussed this principle, each formulating it in their own way; many scholars of ancient philosophy also have found it and interpreted in different ways among the ancients. For instance, Mourelatos (1984: 1–3) calls what I call the *Contagion Principle* the 'transmission model of causality'. I will not engage here with the literature because it would sidetrack us from my main argument. Sedley (1998) appeals to it specifically in relation to Plato's theory of Forms with respect to their causal efficacy; I will return to his interpretation in section 3.3. of chapter 3.

²⁶ I will return to the *One Over Many Principle* and its metaphysical significance in Anaxagoras's and Plato's systems in the Conclusion.

existence of a source which possesses itself condition *f*-ness, which objects somehow 'contract' from the source. Causation is the transmission of a condition from *x* to *y*, say condition *f*-ness, which *x* already has, and is able to transmit it to *y*. By passing *f*-ness on to *y*, *x* makes *y* be what *y* is not yet, and *x* is already, namely qualified by *f*-ness. However, how the transmission of *f*-ness happens may be conceived in different ways. On Anaxagoras's version of the principle, condition *f*-ness is transmitted from the source to other things by literal transmission of parts of the source—parts of the Opposite *F*. The idea is eminently intuitive: e.g., hot things make other things hot by transmitting some of their heat to them. Thus, Anaxagoras has an explanation to offer for how the condition is transmitted from the source; and its explanation has appeal within a system like his, where the Opposites are physical, have physical parts, and may be spatially moved by the cosmic vortex. Related to the first, a second clarification I want to make here is that the *Contagion Principle* does not presuppose (Aristotelian) efficient causation; thus metaphysical systems like that of Anaxagoras devoid of (Aristotelian) efficient causation can abide by the principle with no incoherence.

The *Contagion Principle* is foundational to Plato's metaphysics too, and plays a crucial role in its development via the *Third Man Argument*, as we will see in later chapters. However, the 'mechanism' Anaxagoras offers to account for 'causal contamination' does not transfer in any natural, intuitive, or commonsensical way, from the relation between *two physical* entities (the Opposites and things in the world, in Anaxagoras's system) to the relation between *a physical entity and a transcendent one* (sensible particulars and Forms, in Plato's system). It is when we understand that the *Contagion Principle* requires only *similarity* (with respect to *f*-ness) between the source of *f*-ness and what the source 'contaminates' with its condition, that we understand how Plato could have thought of applying the *Principle* to physical and transcendent entities. I will argue in the following chapters that Plato does retain the *Contagion Principle* throughout his metaphysical development. But first, I will show in the next section how the *Contagion Principle* and the *One Over Many Principle* underpin Anaxagoras's conception of the Opposites and their parts.

1.5. Gunky Opposites

A key presupposition of Anaxagoras's account of how things in the world are qualified by properties, and how they change, is that the Opposites have parts, which enter the constitution of things. Further, if causation in Anaxagoras's system is literally the transference of parts of Opposites from a source to what is causally 'contaminated' by it (by the *Contagion Principle* examined in the previous section), the parts need to be of the same qualitative kind as the source is. This section will introduce two tenets of Anaxagoras concerning part-whole relations *within* each Opposite, which will also be very relevant to our understanding of Plato's metaphysics: Anaxagoras's Opposites i) exist as *unlimitedly divided* into parts; and ii) their parts are of the same kind as the whole of which they are parts; namely, the Opposites are *homoeomers* (to use the term coined by Aristotle). In this section I will show what motivates these tenets and which roles they play in Anaxagoras's metaphysical system.

1.5.1. The Opposites exist as unlimitedly divided into parts

Abiding by Parmenidean principles, Anaxagoras wants his system to allow that anything can 'come out' of anything, to avoid creation *ex nihilo*, destruction of what there is, or qualitative change due to anything other than the spatial movement of the Opposites. Thus, he holds that there is a share of *everything in everything* (see B1, B6, B11, B12); anything can 'come out' of anything, because it was already in it. The challenge then is: What type of ontology could allow everything to be in everything? Any ontology positing indivisibles at the fundamental level of kinds would set a limit below which it is not the case that everything is in everything, and therefore generation and change (as Anaxagoras conceives of them) could not happen. This is a consequence that Anaxagoras does not want. It follows that for him, reality has to be atom-less. Thus, the Opposites must be such as to have unlimitedly small shares or parts, as per what I call Anaxagoras's *No Least Principle*, which I state thus:

No Least-P: There is no lowest limit to the magnitude of the Opposites.

Textual evidence to the effect that Anaxagoras endorses this principle is to be found, for instance, in B1 and B3. I will briefly introduce the texts, and the difficulties that interpreters have encountered in deriving a philosophically sound position from them. In B3 Anaxagoras offers the example of the Opposite Small, as a kind that exists in unlimitedly small shares: 'Nor of the small is there a smallest, but always a smaller' (οὔτε γὰρ τοῦ μικροῦ ἐστὶ τό γε ἐλάχιστον, ἀλλ' ἔλασσον αἰεὶ). He also gives a justification for why the unlimited division of something into smaller and smaller shares does *not* lead to non-being, 'for what-is cannot not be' (τὸ γὰρ ἐὼν οὐκ ἔστι τὸ μὴ οὐκ εἶναι), in line with the Parmenidean views Anaxagoras endorses, as we saw. In B1, when talking about this principle, Anaxagoras displays a flair for paradoxes; he says that each of the Opposites, e.g., the Hot, the Dry, etc., is unlimitedly *large* in amount (πλήθος),²⁷ and unlimitedly *small*:

[I]n the first book of the Physics he [Anaxagoras] says at the beginning, 'All things were together, unlimited both in amount and in smallness.'

[. . .] δηλοῖ διὰ τοῦ πρώτου τῶν Φυσικῶν λέγων ἀπ' ἀρχῆς· ὁμοῦ πάντα χρήματα ἦν, ἅπειρα καὶ πλήθος καὶ μικρότητα.

Anaxagoras uses the **No Least-P** to derive the metaphysical conclusion that the universe is atom-less, because its building blocks, the Opposites, are unlimitedly partitioned into parts, and therefore *gunky*, to use our modern terminology.²⁸ Ted Sider's description of gunk will serve as a standard current account:

²⁷ On the difficulty of rendering πλήθος in English, and the different views different scholars have taken, see Curd (2010: 34); I here follow her translation and the general line of thinking.

²⁸ Understanding in which sense the Opposites are unlimitedly small has proven very challenging since antiquity; there are at least three main alternative interpretations to mine which I will not however discuss here. For further details, see Marmodoro (2017b: chapters 3 and 4).

Borrowing a term from David Lewis (see for example Lewis (1991, 20)), let us say that an object is made of 'atomless gunk' if it has no (mereological) atoms as parts. If something is made of atomless gunk then it divides forever into smaller and smaller parts—it is infinitely divisible. However, a line segment is infinitely divisible, and yet has atomic parts: the points. A hunk of gunk does not even have atomic parts 'at infinity'; all parts of such an object have proper parts. (1993: 286)²⁹

In positing that reality is atom-less, Anaxagoras is the first gunk lover in the history of metaphysics. But his contribution to metaphysics goes even further. That the universe might be made out of *material* gunk is a possibility that philosophers are currently investigating, and theoretical progress is being made. However, consider the possibility that the ultimate elements of our world are not material, but qualitative—they are particular physical properties, i.e., tropes; and consider further, that these tropes are not atomic, but gunky: Anaxagoras innovates in positing a universe of *qualitative* (rather than material) gunk, which I define thus:

QG: A particular physical property (i.e., a trope) is gunky if and only if every part of it has a proper part that is a particular physical property (a trope) of that kind.

A further unique feature of Anaxagoras's ontology, on my interpretation, is that the Opposites are not *potentially divisible* into proper parts that have proper parts, etc., ad infinitum; rather, they are *actually divided* into their gunky parts, as if the super-task of 'chopping' them

²⁹ In the case of a line segment, the *points* into which it is *infinitely* divisible are extension-less; points have no extension in any dimension. It is usually taken to follow, and is here assumed, that points are simple, and do not have parts. Under this conception, points are the *atoms* of the line segment, and the line segment is not gunky. One might on the other hand think of a line segment as not being divisible into extension-less points, but only into smaller and smaller segments ad infinitum. In that case, the line segment is gunky. Similarly, if a surface has line or point atoms, it is divisible into lines or points, which are its atoms. If a surface is gunky, if it is divisible into smaller and smaller surfaces, all of which have surfaces as proper parts.

up thoroughly had been completed.³⁰ We can infer that the Opposites exist as thoroughly divided from B1, where Anaxagoras writes that 'All things were together, unlimited both in multitude and in smallness' (ὁμοῦ χρήματα πάντα ἦν, ἄπειρα καὶ πλῆθος καὶ σμικρότητα). The fact that Opposites for Anaxagoras are *actually gunky* is what facilitates the extreme mixture and inseparability of the shares that he wants (so that everything is in everything; see also section 2.2 of chapter 2). There is no level of division at which a single Opposite occupies on its own the individuated spatial region; the convergence of the Opposites is dense.³¹ In positing a mathematical principle—unlimited division—at the core of his ontology, Anaxagoras implicitly endorses what we might call the *normativity of mathematics* on the physical cosmos. The role of mathematics and geometry will be pivotal in Plato's metaphysics, as I will show in the chapters to follow, and it is plausible to posit that Anaxagoras was influential on Plato in this respect too.

1.5.2. The Opposites are *homoeomers*

Further, Anaxagoras's Opposites are *homoeomers*, as Aristotle puts it in his *Physics* (203a19), coining a technical term specifically to refer to Anaxagoras's position. Elsewhere, in the *De Generatione et Corruptione*, Aristotle gives as examples of *homoeomers* certain types of mixtures, and stuff like water: '[. . .] any part of such a compound is the same as the whole, just as any part of water is water'.³² In modern terms, John Sisko defines an *homoeomer* thus, in the context of his discussion of Anaxagoras: 'Any token of any type of matter is such that each of its spatially determined parts is the same in kind as

³⁰ Anaxagoras assumes directly thoroughly divided elements in the universe, without positing that any super-task has been performed. On the other hand, modern metaphysicians when discussing actual gunk describe it as the result of the super-task of chopping something up, to facilitate our 'visualization' of it.

³¹ For all the issues I only briefly touch upon here concerning actual qualitative gunk, I refer to Marmodoro (2017b: chapter 3).

³² *De Generatione et Corruptione* 328a10–12: Φαμέν δ', εἴπερ δεῖ μεμῖχθαι τι, τὸ μὴθὲν ὁμοιομερὲς εἶναι, καὶ ὥσπερ τοῦ ὕδατος τὸ μέρος ὕδωρ, οὕτω καὶ τοῦ κραθέντος. All translations of Aristotle's works (unless otherwise specified) are from J. Barnes (ed.) *The Complete Works of Aristotle*, 2 vols. The Revised Oxford Translation, Bollingen Series (1984).

the whole: each of its parts is synonymous with the whole' (2009: 90). Although the examples given both by Aristotle and by Sisko are of material entities, the concept applies to non-material physical entities too. Concerning the division of an *homoeomer*, Anaxagoras gives us an instance in B3, which confirms Aristotle's understanding of the Opposites as *homoeomers*: 'Not of the small is there a smallest, but always a smaller' (οὔτε γὰρ τοῦ μικροῦ ἐστὶ τό γε ἐλάχιστον, ἀλλ' ἔλασσον αἶει). This entails that any part into which the Small is divided is Small. By extension, if all Opposites are *homoeomers*, any part of the Hot will also be hot, and so forth.³³ Generalizing *homoeomers* (whether they are Opposites or stuffs) as such that some of an *homoeomer* can be added or subtracted from it, *salva qualitate*, we may say; for example, adding brightness to brightness one gets more brightness, and subtracting gives less of it.³⁴

This is exactly the outcome we should expect, given what we know at this point Anaxagoras wants in his system: extreme mixture of the Opposites, distribution of the Opposites by the distribution of their shares, and causation as transmission of shares of the Opposites (according to the *Contagion Principle*). Both tenets of Anaxagoras regarding the partitioning of the Opposites, namely, that each Opposite has an unlimited number of parts and that each part is of the same kind as the whole, will be importantly relevant to Plato's theory of Forms, as we will see in chapters 4 and 5. It is because the Opposites exist divided in unlimitedly many shares, which are all of the same kind as the whole of which they are parts, that they can transmit the properties they each stand for, by distribution of their parts, and hence,

³³ Also, the seeds may be divided in unlimitedly small parts, but unlimitedly small parts of a seeds aren't seeds of the same kind, because seeds are primitively structured bundles of Opposites.

³⁴ Does small added to small, then, yield something smaller? Counterintuitive as it might seem, the answer for Anaxagoras is: "Yes, it does", because adding shares of an Opposite intensifies its quality; so adding small to small yields more smallness. We will see in section 4.6 of chapter 4 Plato's reaction to this stance of Anaxagoras. By contrast, individuals (for instance, a human being or a tree) may be divided in unlimitedly small parts, but unlimitedly small parts of an individual are not an individual of the same type as the one they are parts of. For instance, the limb of a human being is not a human being. Also, in Anaxagoras's system, the seeds may be divided in unlimitedly small parts, but unlimitedly small parts of a seeds are not seeds of the same kind, because seeds are primitively structured bundles of Opposites, and not qualitatively uniform.

by *constitutional overlap* between the Opposite and the object that has it as a property.

1.6. Closing remarks

It is easy to underestimate the significance of Anaxagoras's metaphysics as an influence on Plato (as well as on subsequent metaphysicians), because many of the ideas that Anaxagoras introduced are by now familiar to us: we can hardly recognize them as innovations because *we*, too, have them as part of our metaphysical toolkit—but this is because *he* introduced them. One of the most influential contributions to the history of metaphysics that Anaxagoras made is that of conceiving of properties as *constituents* of things, and therefore of property distribution across objects in the world in terms of *constitutional overlap* between the property and the object in question. I will argue that this is Anaxagoras's most significant legacy to Plato. Neither Anaxagoras nor Plato has a term specifically for 'overlap'; yet, they share the language of participation, in its various expressions. There is strong motivation and positive textual evidence supporting my interpretation of Plato's Anaxagoreanism. The motivation lies in the explanatory advantages of Anaxagoras's account for objects' qualification over other alternatives that Plato considers; it is eminently plausible to assume that Plato could discern such advantages. Further, Plato's extensive, recurring critical discussion of Anaxagoras's views provides textual evidence of his interest in it. I will discuss these issues in chapters 5 and 6. In the course of the development of his own theory, Plato will try to retain the constitutional overlap model, and enrich it to exploit in full his explanatory potential; and when he will finally abandon it (or at least abandon the original Anaxagorean version of it), this will coincide with a substantial re-conception of the theory of Forms, as we will see in chapter 7.

2

Making things up

2.1. Introduction

What there is at the fundamental level of reality for Anaxagoras is always numerically and qualitatively the same (as per B5: ἀεὶ τὰ αὐτὰ ἐστὶ). Yet, we saw in chapter 1 that not everything that furnishes Anaxagoras's world has been eternally in existence as such, but only the Opposites, the seeds and *nous*. Fragment B4b describes not one but at least two stages in the universe's developments: the primordial state of extreme mixture, and a stage when stuffs and seeds are discernible. B16 (which we examined, for other reasons, in section 1.3 of chapter 1) gives us an indication that earth came about at some (unspecified) point in time, due to the spatial movement the relevant Opposites making it up were subject to. On the other hand, this latter stage, too, according to Anaxagoras's cosmic narrative, is followed by further developments, which include the appearance of living beings. This matters to us here because it shows the need for *structure* in Anaxagoras's ontology. In B4a we read:

For shortly after the beginning of the first book of his *Physics*, Anaxagoras says this, 'Since these things are so, it is right to think that there are many different things present in everything that is being combined, and seeds of all things, having all sorts of forms, colours, and flavours, and that human and also the other animals were compounded, as many as have soul'.

λέγει γὰρ μετ' ὀλίγα τῆς ἀρχῆς τοῦ πρώτου Περὶ φύσεως Ἀναξαγόρας οὕτως· τούτων δὲ οὕτως ἐχόντων χρηὴ δοκεῖν ἐνεῖναι πολλὰ τε καὶ παντοῖα ἐν πᾶσι τοῖς συγκρινόμενοις καὶ σπέρματα πάντων χρημάτων καὶ ιδέας παντοίας ἔχοντα καὶ χροιάς καὶ ἡδονάς, καὶ ἀνθρώπους τε συμπαγῆναι καὶ τὰ ἄλλα ζῶα ὅσα ψυχὴν ἔχει.

I already mentioned that Anaxagoras holds that there is no creation *ex nihilo* (or destruction) and no qualitative alteration of the Opposites over time. Among the extant texts, B3, B5, B10, B13, and B17, where Anaxagoras's views are reported, speak to this effect. Coming to be and passing away of things in the world are processes of aggregation and separation of the Opposites; B17 indicates this (as well as B5, B10, and B13):¹

Anaxagoras says clearly in the first book of the *Physics* that coming-to-be and passing-away are combining and dissociating, writing this: 'The Greeks do not think correctly about coming-to-be and passing-away; for no thing comes to be or passes away, but is mixed together and dissociated from the things that are. And thus they would be correct to call coming-to-be mixing-together and passing-away dissociating.'

σαφῶς δὲ Ἀναξαγόρας ἐν τῷ πρώτῳ τῶν Φυσικῶν τὸ γίνεσθαι καὶ ἀπόλλυσθαι συγκρίνεσθαι καὶ διακρίνεσθαι λέγει γράφων οὕτως· τὸ δὲ γίνεσθαι καὶ ἀπόλλυσθαι οὐκ ὀρθῶς νομίζουσιν οἱ Ἕλληνες· οὐδὲν γὰρ χρῆμα γίνεται οὐδὲ ἀπόλλυται, ἀλλ' ἀπὸ ἐόντων χρημάτων σὺμμίσγεται τε καὶ διακρίνεται. καὶ οὕτως ἂν ὀρθῶς καλοῖεν τό τε γίνεσθαι συμμίγεσθαι καὶ τὸ ἀπόλλυσθαι διακρίνεσθαι.

So, how does a human being come about? On my interpretation, Anaxagoras assumes that the Opposites compose (that is, aggregate) into stuffs, such as earth and flesh. Such stuffs, along with further

¹ B5: 'He makes clear that none of the homogeneous stuffs either come to be or pass away, but that they are always the same.' (ὅτι δὲ οὐδὲ γίνεται οὐδὲ φθείρεται τι τῶν ὁμοιομερῶν, ἀλλ' αἰεὶ τὰ αὐτὰ ἐστί)

B10: 'When Anaxagoras discovered the old belief that nothing comes from that which is not in any way whatsoever, he did away with coming-to-be and introduced dissociation in place of coming-to-be.' (ὁ δὲ Ἀναξαγόρας παλαιὸν εὐρὺν δόγμα ὅτι οὐδὲν ἐκ τοῦ μηδαμῇ <μηδαμῶς ὄντος> γίνεται, γένεσιν μὲν ἀνῆρει, διάκρισιν δὲ εἰσηγεν ἀντὶ γμενέσεως.)

B13: '[. . .] He says that coming-to-be is nothing other than separation, that separation comes to be on account of motion, and that *Nous* is the cause of motion.' ([. . .] εἶπερ τὴν γένεσιν οὐδὲν ἄλλο ἢ ἔκκρισιν εἶναι φησι, τὴν δὲ ἔκκρισιν ὑπὸ τῆς κινήσεως γίνεσθαι, τῆς δὲ κινήσεως αἴτιον εἶναι τὸν νοῦν.)

constituents—the seeds—compose into individual organisms, such as animals and plants.² Given the nature of the Opposites, which are physical particular properties (i.e., tropes), Anaxagoras's account might be interpreted as an *ante litteram* bundle theory of substance. Flesh is a mere aggregate of Opposites in certain densities, while a human being is a *structured* aggregate of Opposites. (The vortex is sufficient to bring about the former but not the latter, for which seeds are also needed.)³

In the first part of this chapter, I will focus on Anaxagoras's account of what makes things qualitatively differentiated; and in the second, on his account of how things are made up, examining the role of the seeds and of *nous*. There are at least three reasons why *nous* requires an in-depth discussion: firstly, because of its metaphysical role within Anaxagoras's system, complementing his ontology of Opposites and seeds; secondly, because *nous* is whereupon Plato and Aristotle concentrate the most when explicitly discussing Anaxagoras's metaphysics;

² Stuff's such as earth or flesh only appear, phenomenologically, to be entities of such kinds, while ontologically they are aggregates of Opposites in different densities. Thus, when flesh 'comes to be', this involves only a displacement and aggregation of Opposites, such that they phenomenologically appear to be flesh (or would appear such to an observer).

³ It would however be an oversimplification to describe Anaxagoras as an extensional mereologist (à la David Lewis, to give the reader a modern point of reference). It is important to give him credit for something scholars have hitherto not identified in his thought, namely, that he does have an account of the *unity* of substance to offer (even if not as articulate and influential like that of Aristotle). The unity of a substance like a human being, a tree, or a stone is for Anaxagoras due to what I call their *simulpresence*. The Opposites are not merely present in the same spatiotemporal region of the universe; they are *inseparably compresent*, as Anaxagoras argues in B8. Their inseparability yields a *sui generis* type of unity, by simulpresence, which we will discuss further in section 2.5 of this chapter. Let me anticipate that strictly speaking, Anaxagoras cannot show that the unity of Opposites by simulpresence fully accounts for the unity of a substance, such as a human being. But simulpresence is the only type of unity in the natural world that Anaxagoras's system allows for—with two exceptions, equally underexplained by Anaxagoras in the extant texts. One exception is that of the unity of stones under the causal influence of the Cold which compacts the earth, as per B16, which we examined in section 1.3. of chapter 1. Here we see the very beginning of the notion of causal impact, which isn't developed fully even in Plato, but that Aristotle will make central to his metaphysics. The second exception we find in Anaxagoras's system, but not conceptualized by him, is the unity the cosmic vortex gives to some clusters of Opposites by bringing them close in space. One final observation: Anaxagoras's approach to the unity of substance goes in the opposite direction to that of Aristotle's; Anaxagoras's has bottom-up unity, from the unity of Opposites; Aristotle, top-down unity, from the oneness of the substantial form re-identifying the components. The readings recommended in footnote 10 might be useful to the reader to explore this topic too.

and thirdly, because *nous* may be plausible thought to provide inspiration, as we will see in chapter 7 (and *passim*), for some of Plato's views in the *Timaeus*.

2.2. Presence and preponderance of Opposites

We saw that the building blocks of Anaxagoras's ontology are the Opposites, which are causal powers with constitutive causal efficacy. Anaxagoras thus assumes that physical properties such as the Hot, the Dry, the Cold, etc., are literally constituents of what else there is in the world (except *nous*): they make up things, thereby qualifying them. This thought may be expressed by saying that an object is qualified in certain way, as *f*, in virtue of having shares or parts of *f*-ness in its constitution. This amounts to the stance (which I argue Plato will endorse too, but modifying it in the course of his own philosophical development), that property possession is *constitutional overlap* between what has the property and the property itself (understood as the open set that includes all the shares of the property).⁴ This metaphysical model for property possession is facilitated in Anaxagoras's system by the further assumptions he makes (but Plato doesn't) that all properties are *homoeomers* and exist as divided all the way down, in unlimitedly many shares or parts that are of the same kind as the whole of which they are parts (as we saw in section 1.5 of chapter 1).

Next, we want to examine a further aspect of Anaxagoras's ontology (absent from Plato's) already briefly mentioned in chapter 1, namely, that the Opposites exist in a state of extreme mixture: each is

⁴ Anaxagoras's and Plato's conception of properties, respectively, as *open sets* and as *fusions*, will be discussed in chapter 5. To anticipate some of the claims made in chapter 5, Anaxagoras does not have a conception of fusion; Plato does, as I will show in chapter 5. For now, by saying that for Anaxagoras a property such as the Hot is the open set of its shares, I mean that the Hot is the open set that includes all the shares of heat in Anaxagoras's universe. The set is open because of Anaxagoras's *No Largest Principle*, expressed in B3:

No Largest-P: There is no upper limit to the magnitude of the opposites.

(I formulate the principle thus in Marmodoro 2017b, section 2.3 of chapter 2.) From this principle, it follows that any set corresponding to an extensional definition of an Opposite is open.

everywhere, and inseparable from all others. Therefore, all Opposites are in everything. For Anaxagoras, everything literally participates in every Opposite, in the sense that it has shares or parts of each of them in its constitution.⁵ Things however are qualitatively differentiated, which is explained by Anaxagoras in terms of preponderance of some Opposites over others in certain spatial regions. The first step to understand his views is to examine the following key principle of Anaxagoras's, the so-called *Everything in Everything Principle* which I formulate thus:

EE-P: There is a share of everything in everything.

This principle is explicitly stated and repeatedly mentioned in the extant texts of Anaxagoras, for instance in B1 (πάντων μὲν ἐν παντὶ ἐνόντων) and B6 (ἐν παντὶ πάντα). There are also two alternative formulations of it. One is in terms of all things *having a share* (μοῖρα) of everything, for instance in B6 (πάντα παντὸς μοῖραν μετέχει), B11 (ἐν παντὶ παντὸς μοῖρα ἔνεστι πλὴν νοῦ), and B12 (ἐν παντὶ παντὸς μοῖρα ἔνεστι πλὴν νοῦ [. . .] τὰ μὲν ἄλλα παντὸς μοῖραν μετέχει). The other formulation is in terms of all things *being together*; see for instance B1 (πάντων ὁμοῦ ἐόντων) and B4b (πάντων ὁμοῦ ἐόντων). I take the view (by no means shared by all interpreters) that the two occurrences of 'everything' in Anaxagoras's statement of EE-P are co-referring, and have the Opposites as their referent.⁶ On my interpretation of Anaxagoras, despite their extreme mixture, the nature of each Opposite is 'pure', and its constitution unmixed; but Opposites exist only mixed with each other. We will come back to this issue in section 2.5 of this chapter.

Interpreters have been traditionally divided on whether the Opposites are present in the extreme mixture of everything in

⁵ Anaxagoras's term, tellingly Platonic too, is μετέχειν; see, e.g., B12 where we find the general claim that: τὰ μὲν ἄλλα παντὸς μοῖραν μετέχει. I will return to μετέχειν and its use by Anaxagoras and Plato in the appendix to chapter 7.

⁶ What 'everything' refers to in each of its occurrences is a matter of controversy among scholars. Some hold that 'everything' has the same referent in both occurrences (see, e.g., Guthrie (1965: 284–5)); others, notably Sedley, argue that the referent is not and cannot be the same (2007: 29–30). I have given arguments for my view in Marmodoro (2017b) section 2.2 of chapter 2.

everything as very small *particles*, or as very small *proportions* of each type of thing. These are respectively labelled in the literature, the *particulate* and the *proportionate* interpretations. On the first of the two, Anaxagoras is thinking of juxtaposed *particles* of stuff; on the other, he is thinking of *proportions* of *stuff* in a mixture. On the particulate interpretation, the material elements of Anaxagoras's ontology are present *as such* in the mixture, as material particles of finite size that are too small to be perceptually discerned; so they appear mixed. On the proportionate interpretation, on the other hand, the total quantity of each type of material element is mixed together with the total quantities of the rest of the elements, so that the totality is a uniform mixture through and through. I argued elsewhere that both lines of interpretation (as well as the third alternative put forward by Patricia Curd as the so-called *liquids model*) are prey to serious difficulties, philosophical and/or textual. My thesis is that the Opposites are not containing each other; rather, they are *compresent* with each other. For Anaxagoras there is a share of everything *with* everything, rather than a share of everything contained *in* everything.⁷

The pressing question for us here (which will be relevant to our understanding of Plato) is this: How are things qualitatively differentiated in a world where everything is a mixture of everything? Anaxagoras's answer is that, in some things, there is 'more' of some Opposites. So, things are qualitatively different on account of which Opposites are preponderant in each thing. This is known in the literature as Anaxagoras's *Preponderance Principle*, which I state thus:

P-P: A thing is *f* if and only if the Opposite *f* is preponderant in that thing's constitution (in relation to other Opposites also present in the thing).

P-P is posited to explain why things are qualified by certain attributes (e.g., being hot), but also why things are a certain kind (e.g., earth). Anaxagoras's Opposites, which are, primitively, different kinds, are everywhere in the world, in unlimitedly many shares. So there are

⁷ See Marmodoro (2017b) chapters 3 and 4.

unlimitedly many shares of all the Opposites everywhere, but *more of* some Opposites in certain spatial locations.⁸ In Anaxagoras's own words, in B1: 'all things being in everything, but each being characterized by what predominates' (πάντων μὲν ἐν παντί ἐνόντων, ἐκάστου δὲ κατὰ τὸ ἐπικρατοῦν χαρακτηριζομένου). Elsewhere also, in B12, being preponderant is expressed in terms of being 'the most' (πλείστος) in a bundle of Opposites:

Nothing else is like anything else, but each one is and was most manifestly those things of which there are the most in it.

ἕτερον δὲ οὐδὲν ἐστὶν ὅμοιον οὐδενί, ἀλλ' ὅτων πλείστα ἐνι, ταῦτα ἐνδηλότατα ἐν ἑκαστόν ἐστι καὶ ἦν.

First, a terminological point. The expression ἑκαστόν ἐστι καὶ ἦν ('each one is and was') is evidently close to Aristotle's τὸ τί ἦν εἶναι ('to be what it was'), and must be a precursor of it. Aristotle holds that the essence of an entity is what determines the entity's identity over time—the feature whose loss the entity cannot survive. The way Aristotle expresses this thought is by saying that the essence of an entity is *being what it was*. Being now what the entity was, given any conceivable change the entity could have suffered, captures the entity's diachronically invariant 'being', i.e., what survives through any change; namely, its essence. I submit as a plausible, although unverifiable, hypothesis that Aristotle's conception of essence was influenced, if not shaped by Anaxagoras, as per B12, where the expression ἑκαστόν ἐστι καὶ ἦν captures the idea that the identity of an object survives over time ('is and was'). Anaxagoras is making (not only) the generic point that things are qualified by what is preponderant in them, in their past, their present, or their future states. He is also explaining that each thing has an identity, which is determined by the features that 'each one *is* and *was* most manifestly'; namely, not only the features that happen to be preponderant now in each object (ὅτων πλείστα ἐνι), but the features that

⁸ I addressed the issue of how there can be more share somewhere of something that has unlimitedly many shares everywhere in Marmodoro (2017b), section 3.6 of chapter 3.

are and were preponderant in each object, namely, their diachronically invariant predominant features, i.e., their essential features, we would say. This idea and terminology is picked up by Plato in the *Phaedo*, which we could speculate might have been the means by which Anaxagoras's idea reached and influenced Aristotle. Plato writes,

In the same way the smallness in us will never become or be great, nor will any other opposite *which is still what it was*, ever become or be also its own opposite. (102e6–103a1, my emphasis)

ὥς δ' αὐτως καὶ τὸ σμικρὸν τὸ ἐν ἡμῖν οὐκ ἐθέλει ποτὲ μέγα γίγνεσθαι οὐδὲ εἶναι, οὐδ' ἄλλο οὐδὲν τῶν ἐναντίων, ἔτι ὃν ὅπερ ἦν, ἅμα τοῦναντίον γίγνεσθαι τε καὶ εἶναι.

I want now to investigate the question of how an Opposite can be preponderant at a location, in Anaxagoras's system. We saw that, according to P-P, if an Opposite is preponderant in relation to the other Opposites in a location, it is most manifest there (ἐνδηλότατα in B12), i.e., it is perceptually evident; and the bundle wherein it is, appears of that kind to us, e.g., hot, rough, yellow, etc. What is Anaxagoras's metaphysical 'mechanism' for preponderance? Also, is he thinking of preponderance in *quantity* or in *intensity*? For instance, is a bundle hot because there are more shares of the Hot in it, or because the shares of Hot in it are very hot? Both interpretations of P-P, in terms of quantitative preponderance or higher intensity, are consistent with the other metaphysical commitments of Anaxagoras, and either way, the 'mechanism' that produces preponderance is accumulation and dispersal of the shares of the Opposites.⁹ There is however a remaining difficulty left open: if something small becomes smaller by accumulation of shares of the small, we need to understand B3 ('there is no smallest of the small') as implying an ever-increasing accumulation of shares of the small, which appears paradoxical. Unless Anaxagoras uses 'small' differently for the parts of the Opposite Small than for the property of a small thing, the parts of the Small get smaller by their proper parts,

⁹ See Marmodoro (2017b), section 2.5 of chapter 2.

while the small thing gets smaller by accumulation of parts of the Small. I will return to this issue in section 4.6 of chapter 4, where I will discuss Plato's approach to what I call the *Paradox of Smallness*, and examine Anaxagoras's position vis-à-vis that of Plato.

2.3. A bundle theory of objects

With the benefit of the preceding discussion of Anaxagoras's conception of the Opposites and of the fundamental principles governing his ontology, we are now ready to return to the issue of how the Opposites compose (i.e. aggregate) into things. A theory of objects wherein objects are bundles of properties is called, in modern metaphysics, *bundle theory*. Different theories of properties make for different versions of the bundle theory. Modern bundle theorists, for the most part, endorse the view that properties exist as tropes, namely, as particulars. On the trope version of the bundle theory, objects are bundles of tropes. As we saw, Anaxagoras's position aligns with this version of the theory. This Anaxagorean conception of the constitution of things is Plato's starting point too; Plato remains committed to a bundle theory of material objects,¹⁰ until a late turning point in his metaphysical development, in the *Timaeus*, as we will see in chapter 7. In what follows, I will first provide arguments in support of the claim that Anaxagoras's Opposites are tropes, and subsequently arguments for the claim that things for him are bundles of them.

Anaxagoras's Opposites, e.g., the Hot, exist in nature and are located in space and time. They are subject to physical causation of different kinds. For instance, they are impacted upon and set in movement by the cosmic vortex generated by *nous*, which can make them change spatial location.¹¹ That the Opposites can be impacted upon by the vortex indicates that they are *not* transcendent properties (like Plato's

¹⁰ He is additionally committed, albeit implicitly, to what I call a 'ghost ontology' of partakers, because the partakers are never posited explicitly as *bona fide* entities in the ontology; see also section 7.1, where I return briefly on this issue.

¹¹ From the fact that the Opposites can change spatial location, it follows that they are not individuated by it; in this respect, Anaxagoras's conception of the Opposites differs from the mainstream ways of individuating tropes nowadays.

Forms) or abstract properties (like Aristotle's forms). They are physical properties; but they are not instantiated by coming to qualify matter or inhere in matter.

Further, the Opposites compose into aggregates. As we saw in B15, the 'generation' of earth, for instance, is just the becoming perceptible of certain concentrations of Opposites in a certain location. Of course, this does not mean that earth or blood, or other stuffs, are perceptual illusions. They are mereological sums or aggregates, each comprising a different set of preponderant Opposites, with a different qualitative profile each. Things resulting from the aggregation of Opposites are *not* metaphysically emergent, but only phenomenal wholes.¹² On the other hand, it is important to emphasize that Anaxagoras's position concerning material objects is not eliminativist; he does not deny objects (*qua* phenomenal wholes) a place in his system. Rather, on his account, material objects exist, but are metaphysically fully reducible to the fundamental building blocks (Opposites and seeds, in the case of living beings) out of which they are composed, and their arrangement in space and time. In relation to this issue, it is interesting that we find in Anaxagoras a distinction which we will not find in Plato, but which we do find in Aristotle. For Anaxagoras, on the one hand, there is stuff like earth; on the other, there are organisms like human beings. Anaxagoras must have recognized (although no explicit claim has survived for us) that the fundamental ontological difference between them lies in their respective structures. Stuffs are mere aggregates of Opposites, which come together as a 'thing', perceptually, for us. Organisms, on the other hand, derive from the clustering of Opposites around structures existing in the physical world; these structures are embodied in the seeds, which, for Anaxagoras, exist primordially in nature.¹³ Structures are parts of the bundles, *on a par* in this respect with the Opposites, i.e., as constituents of the bundles.

¹² It appears to perceivers that there are wholes, where there are only parts. As a consequence, Anaxagoras is a *perceptual relativist* about ontological composition, i.e., he relativizes composition to perception.

¹³ In this sense, in Anaxagoras, as in Aristotle, organisms are *more unified* (into individual objects) than (inorganic) stuff is. (Their respective reasons for this differentiation by degrees of unity are not however the same.)

2.4. Seeds of structure

We saw that in Anaxagoras's system the Opposites cluster in certain regions of space, in particular ratios to one another, making up bundles of stuff, like earth or flesh. Stuffs contribute to the constitution of material objects. Yet, living beings are (symmetrically and/or asymmetrically) structured individual entities. (For instance, the body of a human being is symmetric along the vertical axis and asymmetric along the horizontal one.) Also, organisms develop along repeatable patterns in nature. (For instance, man begets man.) Furthermore, they may undergo developmental stages involving diachronic asymmetries. (For instance, the growth of facial hair in pubescent boys is a developmental structural feature that characterizes the male human population.) A living being is physically structured; its life phases are diachronically structured; and it generates offspring with the same structure as the parents'. Anaxagoras is aware that he needs to explain the presence in nature of living beings *qua* structured individual entities. He cannot explain life with an ontology of Opposites and their ratios only, because these cannot yield structure. He cannot allow for the organisms to be created as such, as this would contravene the Parmenidean strictures he abides to. Therefore, he has to posit the sempiternal existence of structures in the world, so as to facilitate the coming about of individuals, without their being created *ex nihilo*. There is a naturalistic model for this readily available to Anaxagoras: it is the biological one, where organisms come from seeds. I submit that Anaxagoras endorses this model, and posits ordinary biological seeds as part of his ontology.¹⁴ Only that these biological seeds are not created, but have always been in the world, as we saw in B4b.¹⁵ On my reading, seeds are powers for the dynamic development, in the right conditions, of physically and diachronically structured entities, i.e., living beings. If seeds

¹⁴ In interpreting Anaxagoras's seeds as ordinary biological seeds, I align myself with many other scholars, including, for instance, Furley (1976: 72), Schofield (1980: 124), Curd (2002: 153), Sedley (2007: 15), and others.

¹⁵ One might want to raise this question: If the seeds are the source of structure, what gives structure to them? There are two explanatory hypotheses we can entertain: that *nous* has given them structure, or that it is an irreducibly primitive fact about the universe that the seeds contained in it are structured. Sedley (2007: 19) briefly discusses these two possibilities and opts for the primitive fact one, as I do too.

embody the required structures, individuals grow out of the seeds by addition of stuffs (and ultimately, Opposites) to the seeds themselves.

A second type of structure in nature that Anaxagoras needs to account for in his system are structures of multiple individual organisms, such as forests of trees. The seeds cannot provide an explanation for them; there are no seeds of (e.g.) forests. In order to account for structures of individuals Anaxagoras provides in B9 a second type of explanation of structure, namely, the movements generated by the cosmic vortex:

[. . .] as these things are revolving in this way and being separated off by force and swiftness (the swiftness produces force), and their swiftness resembles the swiftness of nothing that is now present among humans, but is altogether many times as fast.

Οὕτω τούτων περιχωρούντων τε καὶ ἀποκρινομένων ὑπὸ βίης τε καὶ ταχυτήτος (βίην δὲ ἡ ταχυτῆς ποιεῖ), ἡ δὲ ταχυτῆς αὐτῶν οὐδενὶ ἔοικε χρήματι τὴν ταχυτῆτα τῶν νῦν ἐόντων χρημάτων ἐν ἀνθρώποις, ἀλλὰ πάντως πολλαπλασίως ταχὺ ἐστί.

As we read in, e.g., B12, the cosmic vortex is responsible for many cosmic phenomena of separation and structure, acting as it were on behalf of *nous*:

And whatever sorts of things were going to be, and whatever sorts were and now are not, and as many as are now and whatever sorts will be, all these *Nous* set in order. And *Nous* also ordered this revolution, in which the things being separated off now revolve, the stars and the sun and the moon and the air and the aether. This revolution caused them to separate off. The dense is being separated off from the rare, and the warm from the cold, and the bright from the dark, and the dry from the moist. But there are many shares of many things.

Καὶ ὅποια ἔμελλεν ἔσεσθαι καὶ ὅποια ἦν ἄσσα νῦν μὴ ἐστί, καὶ ὅσα νῦν ἐστί καὶ ὅποια ἔσται, πάντα διεκόσμησε νοῦς, καὶ τὴν περιχώρησιν ταύτην, ἣν νῦν περιχωρεῖ τὰ τε ἄστρο καὶ ὁ ἥλιος καὶ ἡ σεληνὴ καὶ ὁ αἴθρ καὶ ὁ αἰθήρ οἱ ἀποκρινόμενοι. ἡ δὲ περιχώρησις αὐτῇ ἐποίησεν

ἀποκρίνεσθαι. καὶ ἀποκρίνεται ἀπὸ τε τοῦ ἀραιοῦ τὸ πυκνὸν καὶ ἀπὸ τοῦ ψυχροῦ τὸ θερμὸν καὶ ἀπὸ τοῦ ζοφεροῦ τὸ λαμπρὸν καὶ ἀπὸ τοῦ διεροῦ τὸ ξηρόν. μοῖραι δὲ πολλαὶ πολλῶν εἰσι.

In conclusion, Anaxagoras addresses the issue of whence structure in the world by positing seeds that have always existed in the mixture, around which Opposites cluster because of the operation of *nous* via the cosmic vortex. Positing the seeds amounts to adding a primitive to the ontology, which is a cost; and appealing to *nous* brings other difficulties of a teleological nature (which Plato and Aristotle zoomed on in their critique of Anaxagoras); we will investigate these issues in this chapter's appendix.

2.5. The world is one

Anaxagoras holds that all the shares (of all the kinds) of Opposites exist in the world not only as extremely mixed and bundled into clusters, but also as *inseparable* from each other. This is the expression of a worldview that I will try to explicate in what follows, in relation also to what Plato and Aristotle think on the matter. First, a clarification is in order. There is a systematic linguistic ambiguity in how we, modern readers of Anaxagoras, Plato, and Aristotle, use the word 'opposite' with reference to these three thinkers. In Anaxagoras *any* type of physical property is an Opposite; the fact that Opposites pair up (e.g., hot and cold) is not salient for him; so *de facto* we can treat the word 'opposite' as synonymous of 'physical property' in general, when talking about Anaxagoras. Whilst in Plato and Aristotle an opposite is specifically a property that belongs to a pair and is considered *qua* belonging to the pair, such as hot in relation to cold.

That there are some properties in the world that are inseparable, i.e., occur in the world always 'together with' some other property, is a fact that we can observe: consider the interdependence of spin and charge, as elementary properties that are always instantiated together and never on their own. The question that the metaphysician wants to raise is why this is so; in B8 Anaxagoras addresses the issue within his system. In B8, as I interpret it, we find Anaxagoras's general thesis of

the inseparability of all Opposites illustrated with the example of the pair of Opposites the Hot and the Cold:

The things *in the one kosmos* have not been separated from one another, nor hacked apart with an axe—neither the hot from the cold nor the cold from the hot [. . .]. (my emphasis)

οὐ κεχώρισται ἀλλήλων τὰ ἐν τῷ ἐνὶ κόσμῳ οὐδὲ ἀποκέκοπται
πελέκει οὔτε τὸ θερμὸν ἀπὸ τοῦ ψυχροῦ οὔτε τὸ ψυχρὸν ἀπὸ τοῦ
θερμοῦ [. . .].

I take B8 to provide not only an example of inseparable Opposites, but also Anaxagoras's argument in support of the general thesis that all Opposites are inseparable. They are *simulpresent* in nature.¹⁶ Anaxagoras's argument for the inseparability of all Opposites does not depend on his specific choice of example, i.e., the Hot and the Cold, whose necessary inseparability is additionally complicated by their being a pair of Opposites.¹⁷ His key idea is that all types of Opposites are inseparable because they are *in a single world* (ἐν τῷ ἐνὶ κόσμῳ). What is the significance of this point? It is twofold. That Anaxagoras is addressing an extremely interesting philosophical question, of relevance to us too, is significant; and which type of answer he specifically gives is also significant. I submit that in B8 Anaxagoras is expressing the thought (albeit *in nuce*) that there exist *primitive conditions* in ontology; *being in a single world* is one of such conditions for Anaxagoras, and is manifested in his system in the inseparability of all types of Opposites. I take this to mean that the inseparability of all the Opposites is a type of *primitive ontological unity* between all the properties there are in this world; thus, their inseparability is what makes this world one, an individual cosmos.¹⁸

¹⁶ See also footnote 50 on this topic.

¹⁷ For this reason, the example of the Hot and the Cold in B8 is not optimal for making the metaphysical point Anaxagoras wants to make.

¹⁸ For the modern metaphysician there is an interesting contrast to explore here, between versions of monism in the history of philosophy. I submit that Anaxagoras introduces possibly the first and certainly a distinctive type of monism with his argument in B8 concerning the unity of all Opposites. I call it *Extensional Monism*. For Anaxagoras all the properties there are, are necessarily inseparable because they are *primitively com-present*. In contrast to Jonathan Shaffer's *Priority Monism*, they are not *holistically unified*

The significance of Anaxagoras's idea does not remain unnoticed by Aristotle. Aristotle will refine Anaxagoras's thought, while also criticizing it. For Aristotle too there are properties (that are not within pairs of opposites) that exist in the world as inseparable: properties in categories other than that of substance are inseparable from those in the category of substance. In other words, Aristotelian non-substantial forms (such as being white or hot or somewhere, etc.) cannot be found in the world as instantiated on their own, unattached to a subject—they always belong to a substance. Interestingly, for Aristotle too this is an assumption, and has the metaphysical status of a *primitive condition* in his ontology. In the *Physics* Aristotle writes about Anaxagoras, criticizing him and at once giving his own position:

The statement that complete separation never will take place is correct enough, though Anaxagoras is not fully aware of what it means. For affections are indeed inseparable. If then colours and states had entered into the mixture, and if separation took place, there would be something white or healthy which was nothing *but* white or healthy, i.e. was not the predicate of a subject. So his Mind absurdly aims at the impossible, if it is supposed to wish to separate them, and it is impossible to do so, both in respect of quantity and of quality—of quantity, because there is no minimum magnitude, and of quality, because affections are inseparable. (188a5–13)

τὸ δὲ μηδέποτε διακριθῆσθαι οὐκ εἰδότης μὲν λέγεται, ὀρθῶς δὲ λέγεται· τὰ γὰρ πάθη ἀχώριστα· εἰ οὖν μέμικται τὰ χρώματα καὶ αἱ ἕξεις, ἐὰν διακριθῶσιν, ἔσται τι λευκὸν καὶ ὑγιεινὸν οὐχ ἕτερόν τι ὃν οὐδὲ καθ' ὑποκειμένου. ὥστε ἄτοπος τὰ ἀδύνατα ζητῶν ὁ νοῦς, εἴπερ βούλεται μὲν διακρίναι, τοῦτο δὲ ποιῆσαι ἀδύνατον καὶ κατὰ τὸ ποσὸν καὶ κατὰ τὸ ποιόν, κατὰ μὲν τὸ ποσὸν ὅτι οὐκ ἔστιν ἐλάχιστον μέγεθος, κατὰ δὲ τὸ ποιόν ὅτι ἀχώριστα τὰ πάθη.

by definitional interdependence, which would make the world an interrelated whole. I am not able to pursue this thought further here because it would take us astray from the main line of argument. For the reader who might want to read more about monism as grounded on the holistic unification of the world, I suggest Jonathan Shaffer (2010a) and (2010b).

Aristotle's position is metaphysically sophisticated: non-substantial forms are always predicated of objects, namely, of instantiated substantial forms, which are in turn always qualified by non-substantial forms. The sophistication of this position lies in Aristotle's view that non-substantial forms do not exist as separate and self-standing in the world. For Aristotle there are no entities such as the wet or the hot on their own, i.e., having separate existence, either as transcendent entities (Plato) or as physical tropes (Anaxagoras). In this sense, for Aristotle, material objects, such as, e.g., dogs or stones, though dependent on properties, enjoy a type of separability that properties do not have in his system.

We are now in the position to see that both Aristotle and Anaxagoras claim that there is primitive inseparability of properties in the world, but they part company with respect to which properties are inseparable, and why. Plato too at some stage of his metaphysical development introduces in his system the necessary inseparability of some properties (which do not belong to the same pair of opposites.) Plato's position is however different from both that of Anaxagoras and that of Aristotle, and concerns second-order properties, the Great Kinds introduced in the *Sophist*, e.g., the Forms of Sameness and of Difference. I will argue in chapter 6 that the Great Kinds are Plato's way to reify certain types of inseparability and necessities holding among properties; for instance, 'that which is selfsame is different from other things' (τὸ ὄν αὐτὸ τῶν ἄλλων ἕτερον εἶναι, 257a1, my translation), therefore the property of being selfsame is inseparable from that of being different. To these issues we will return in chapter 6.

I mentioned already that I take Anaxagoras's argument in B8 not to depend on his specific choice of example, i.e., the Hot and the Cold, whose necessary inseparability is additionally complicated by their being a pair of opposite properties. In Anaxagoras's system *all* types of Opposites (which means, all types of properties) are necessarily inseparable from each other, even if the necessity for the Hot to be compresent with, e.g., the Large is different from the necessity for the Hot to be compresent with the Cold (that is to say, the Hot and the Cold are necessarily compresent for more reasons than one). Anaxagoras however does not distinguish the necessity by which *all* Opposites are compresent in his system, from that by which Opposites *within a pair* are

compresent. Therefore, his explanatory target and his explanation for the necessary inseparability of the Opposites are different from those of Plato and Aristotle when they engage in discussing the necessary inseparability of *opposites within a pair*. The necessary inseparability of opposites within a pair (such as light and heavy), is identified by Plato (in the *Phaedo*), and explained by Aristotle (in the *Physics*).

Let us now turn to Plato. The first observation to make is that Plato considers opposites within a pair *in the sensible world* (i.e., when instantiated) as necessarily inseparable, whilst the respective transcendent Forms are *not* inseparable.¹⁹ (He provides no justification for this different conception of properties as instantiated and transcendent, respectively.) To illustrate this with an example, hot and cold *qua* properties of things in the world are to be found always together; if something participates of the Form of Cold, will necessarily participate of the Form of Heat too; but the Forms of Cold and of Heat are entirely separate transcendent entities. Thus, Plato writes in the *Republic* about things in the world:

‘[. . .]the many bigs and smalls and lights and heavies, is any one of them any more the thing someone says it is than its opposite?’ ‘No, each of them always participates in both opposites.’ (479b5–7)²⁰

[. . .] καὶ μεγάλα δὴ καὶ μικρὰ καὶ κοῦφα καὶ βαρέα μὴ τι μᾶλλον ἢ ἂν φήσωμεν, ταῦτα προσρηθήσεται ἢ τάναντία; οὐκ, ἀλλ’ αἰεὶ, ἔφη, ἕκαστον ἀμφοτέρων ἔξεται.

Plato is here stating a *primitive condition* in his ontology (metaphysically *on a par*, even if different in content, with those we saw earlier Anaxagoras and Aristotle posited in their ontologies): in general terms, if a sensible object is qualified by a property within a pair of opposites, it will also be qualified by the other property within the pair. That is, opposites are always compresent in nature. (However, for Plato

¹⁹ At least until the *Timaeus*, where Plato posits the existence of what we might call an *über-Form*, the *paradeigma*, that comprises them all. We will come to this topic in chapter 7.

²⁰ All translations of Plato’s works (unless otherwise specified) are from J. Cooper (ed.), *Plato Complete Works*, Hackett Publishing, 1997.

the respective Forms are not, as already mentioned. Aristotle will implicitly disagree with this latter assumption of Plato's, as I will show below.) Plato posits the necessary inseparability of opposites within a pair in nature; but he has no metaphysical justification to offer for it. Aristotle, on the other hand, posits the same necessary inseparability, and does provide a justification for it.²¹ The key to his explanation is that opposites within a pair belong to the same genus. For instance, hot and cold belong to the genus 'thermal'. Aristotle thinks of the genus as a continuum between two opposites; any point in the continuum is of some distance from, e.g., the hot and some distance from the cold.

To draw together the conceptual acquisitions of this section, we saw that Anaxagoras, Plato, and Aristotle all engage—in different ways—with the issue of the necessary inseparability of properties. Why does this feature of the world appear metaphysically salient to them, and in need of an explanation? We saw that for Anaxagoras, all types of Opposites (i.e., properties in general, including those in pairs of opposites but not exclusively those) are simulpresent in nature. For Plato, instances of opposites within a pair are always compresent in the sensible objects they qualify, while corresponding Forms are not governed by this necessary inseparability.²² For Aristotle, all types of properties exist as always instantiated in objects in nature, as inseparable from a subject.²³ Now, generalizing from what each of these three thinkers specifically holds about the inseparability of properties, what is significant to my overall argument is that they all acknowledge a *structural feature* of the world, that manifests itself in the necessary inseparability of properties. What we saw in this section is that Anaxagoras is aware

²¹ See *Physics* 189a10–12 (and elsewhere): 'It is clear that our principles must be contraries. The next question is whether the principles are two or three or more in number. One cannot be; for *there cannot be one contrary* [. . .]' (my emphasis); and 217a33–b10: 'For as the same matter becomes hot from being cold, and cold from being hot, because it was potentially both, so too from hot it can become more hot, though nothing in the matter has become hot that was not hot when the thing was less hot [. . .] So that the greatness and smallness, also, of the sensible bulk are extended, not by the matter's acquiring anything new, but because the matter is potentially matter for both states; so that the same thing is dense and rare, and the two qualities have one matter.'

²² Bracketing for now the *Sophist* and the *Timaeus*, which I will address in chapters 5 and 6.

²³ I explain and argue for my view in 'Instantiation' (unpublished). Here I limit myself to placing Aristotle's position on the map, in relation to those of Anaxagoras's and Plato's.

of structural features of the world (over and above the structural features introduced by the seeds or by the vortex, which we examined in the previous section), and posits universal compresence of all the types of Opposites in nature, as a primitive condition in his ontology. Plato's positing the necessary compresence of instantiated opposites within a pair is a similar recognition of a universal structural feature, which is not justified within Plato's metaphysics and is there too posited as a primitive condition. On account of the examples used by Anaxagoras and Plato, one might speculate that in positing these universal structural features of the world they might have been influenced by *de dicto* necessities discoverable by studying the natural world. By contrast, Aristotle's position concerning the universal structural feature, that properties are always instantiated in objects in the world, is not a *de dicto* necessity.

2.6. The role of *nous*

We saw in the preceding sections that for Anaxagoras the world as we know it derives from an original mixture of Opposites that is set in motion by a vortex generated by *nous* (as per B12), which moves selectively elements in the mixture (as per B13 and B15). In B12 we read: 'And *Nous* controlled the whole revolution, so that it started to revolve in the beginning' (καὶ τῆς περιχωρήσιος τῆς συμπάσης νοῦς ἐκράτησεν, ὥστε περιχωρῆσαι τὴν ἀρχήν). Anaxagoras thus posits *nous* as the single cosmic source of movement and structure²⁴ in the universe, which complements his ontology in ways that are comparable to Plato's *Demiurge* in the *Timaeus*²⁵ and Aristotle's unmoved mover—comparisons which I will not pursue in this book.

Nous is a power in Anaxagoras's system; indeed, Anaxagoras tells us, the mightiest power there is (ἰσχύει μέγιστον, B12). It is a power to rule

²⁴ *Nous* is a source of structure in that it initiates the vortex that moves around the Opposites enabling them to cluster around the seeds which embody primitively organic structures. Also by the same token *nous* is responsible for *meta-structures* in nature, namely, structures of structures, such as a forest of trees (see section 1.1 of chapter 1 and 2.4 of chapter 2 earlier).

²⁵ Interestingly, there is no cause of cosmic movement pre-*Timaeus* in Plato.

itself (B12); to know everything (B12); to generate the cosmic vortex (B12); to control all things and to control in a special way animate things (B12); and to reside in animate things (B11). It is interesting to note that when Anaxagoras explains the role and impact of the cosmic vortex *nous* generates in nature, he uses the verb ποεῖν (make, cause) to refer to its operation. He writes: 'the revolution caused [ἐποίησεν] them [sc. things] to separate off' (B12); and 'the revolution made [ἐποίησεν] them [sc. things] dissociate much more' (B13). Additionally, Anaxagoras talks in other places of the role and impact of *nous* in nature in terms of κρατεῖν (control). In B12 he writes that '*Nous* has control [κρατεῖ] over all things [. . .]' and 'controlled [ἐκράτησεν] the whole revolution'; and 'all these *Nous* set in order [πάντα διέκοσμησεν].'²⁶ These textual observations concerning B12 and B13 indicate that *nous* has intentionality—there seems to be a plan that is gradually unfolding in the history of the world. They suggest that Anaxagoras conceives of the causal action of *nous* on the universe, via the vortex, in anthropomorphic terms—doing, or making things happen, ruling over them, as a human being would, and not as (or, not only as) a purely physical cause would.²⁷ Thus, *nous* complements Anaxagoras's ontology by being a cosmic intelligent power.

There are also life powers in Anaxagoras's systems: the seeds. Seeds have the power to develop in a structured way, but not to design and plan their own development. Thus, at the cosmic level, *nous* is responsible for the world's order and design, which it constructs; while at the level of the world's furniture, there exist primitively structured clusters of Opposites, which develop around the seeds by addition of more Opposites when *nous* sets the world in order.²⁸ Therefore, just as *nous* is causally responsible for the cosmic changes in the world, while the

²⁶ διακόσμησις indicates the orderly (and beautiful) arrangement of the universe, especially as the term is used by the Pythagoreans. See also Hussey (1972: 18) on the use of the term κόσμος in early Greek philosophy.

²⁷ I acknowledge that at one point in B13 Anaxagoras uses a more evidently physical verb, writing 'whatever *Nous* moved (ἐκίνησεν)'; where movement is to be understood as the effect of the *nous*' control over things. But this is one occurrence only in all the extant texts.

²⁸ If counterfactually *nous* had the power to control the structural development of seeds, this would defeat the purpose of positing that the seeds exist *ab aeterno*.

Opposites (and living beings with souls who cultivate the earth and build cities, as per B4a) are causally responsible for local changes, so *nous* is responsible for the organizational macro-structure of the cosmos, while the life powers in the seeds are responsible for the organizational micro-structures in the world, the organisms.

Anaxagoras's introduction of *nous* in his ontology to explain some structural features of the world is deeply innovative and influential, *in primis* on Plato and Aristotle, and on the subsequent history of philosophy. David Sedley identifies as Anaxagoras's 'most decisive philosophical innovation' to posit that 'only by making mind and matter two irreducibly different kind of things can we explain the power of mind to control matter' (2007: 8; see also 11–12). Recall in support of this interpretation B12, where Anaxagoras posits that the radical difference between the unmixed constitution of *nous* and the constitution of everything else is a necessary condition for *nous*' causal action:

The other things have a share of everything, but *Nous* is unlimited and self-ruling and has been mixed with no thing, but is alone itself by itself. For if it were not by itself, but had been mixed with anything else, then it would partake of all things, if it had been mixed with anything (for there is a share of everything in everything just as I have said before); and *the things mixed together with it would thwart it, so that it would control none of the things* in the way that it in fact does, being alone by itself. For it is the finest of all things and the purest, and indeed it maintains all discernment about everything and has the greatest strength. (my emphasis)

Τὰ μὲν ἄλλα παντὸς μοῖραν μετέχει, νοῦς δὲ ἐστὶν ἄπειρον καὶ αὐτοκρατὲς καὶ μέμικται οὐδενὶ χρήματι, ἀλλὰ μόνος αὐτὸς ἐφ' ἑαυτοῦ ἐστίν. εἰ μὴ γὰρ ἐφ' ἑαυτοῦ ἦν, ἀλλὰ τεφ' ἐμέμικτο ἄλλω, μετείχεν ἂν ἀπάντων χρημάτων, εἰ ἐμέμικτό τεφ' (ἐν παντὶ γὰρ παντὸς μοῖρα ἔνεστιν, ὥσπερ ἐν τοῖς πρόσθεν μοι λέλεκται). καὶ ἂν ἐκώλυεν αὐτὸν τὰ συμμεμειγμένα, ὥστε μηδενὸς χρήματος κρατεῖν ὁμοίως ὡς καὶ μόνον ἔόντα ἐφ' ἑαυτοῦ. ἔστι γὰρ λεπτότατόν τε πάντων χρημάτων καὶ καθαρώτατον, καὶ γνώμην γε περὶ παντὸς πᾶσαν ἴσχει καὶ ἰσχύει μέγιστον.

There is an issue I want to bring into focus now, concerning the constitution of *nous*, that seems to have evaded scholarly attention thus far. The mind-body problem has been, throughout its history, the problem of how something immaterial can have a causal effect on something material. More generally, it is widely thought that items from different ontological categories cannot impact causally on each other, because they do not share the same type of properties. In my understanding, this position, which is nowadays the default one in philosophy, stems from the ancient Greek conception of the opposites acting on each other, which Aristotle expresses in his *Physics* as the claim that change is always from an opposite to its opposite within the same genus, e.g., from hot to cold and *vice versa*.²⁹ From this principle it follows that categorially different properties cannot interact causally between them, since they aren't opposites and do not fall under the same genus, or even the same ontological category. Hence, the origin of the mind-body problem. Surprisingly for us however, Anaxagoras thinks differently. In order for *nous* to be able to interact causally with the world, *nous* needs to be as categorially different from the material world as it can be. The intuition underpinning this position is the exact opposite of the view that has generated (and made insoluble) the mind-body problem in the history of philosophy—namely, that mind and body cannot interact, because categorially different. Anaxagoras's claim is that the control *nous* has on the things it controls (κρατεῖν; with strength, ἰσχύς) *depends on* the categorial difference between *nous* and what it controls, in such a way that if they weren't categorially different—if *nous* had been constituted of physical Opposites (by being mixed with them) as things in nature are—it could not control them. Anaxagoras conceives the categorial difference between *nous* and physical things as a condition that enables *nous* to have a special type of causal impact on them.

Let us now consider the significance of Anaxagoras's stance in relation to the thought of Plato and Aristotle. Anaxagoras posits that only categorially different entities can control one another. I will argue in section 3.4 of chapter 3 and also 7.4. of chapter 7 that we find this type

²⁹ See, e.g., *Physics* 188b25–6.

of governance in Plato's metaphysics too: Plato's transcendent Forms meet the metaphysical conditions set by Anaxagoras for causal governance on the physical world. As we will see, e.g., a non-physical, transcendent perfect square, which is categorially different from a carpenter's wooden square, has 'control' over the carpenter's square, by determining the geometrical properties of that square. Similarly, we find the same intuition in Aristotle's theory of perception, where an object's form *without the object's matter* affects the sense organ of the perceiver: the form (e.g., an apple's redness) and the sense organ (the eye) are categorially different entities, the first being abstract and the latter concrete.³⁰

Let me close this discussion by noting that Anaxagoras's metaphysical intuition does not remain unnoticed by Aristotle, who writes in the *Physics*:

So, too, Anaxagoras is right when he says that Mind is impassive and unmixed, since he makes it the principle of motion: for it could cause motion in this way only by being itself unmoved,³¹ it might move, and have control only by being unmixed. (256b24–7)

διὸ καὶ Ἀναξαγόρας ὀρθῶς λέγει, τὸν νοῦν ἀπαθῆ φάσκων καὶ ἀμιγῆ εἶναι, ἐπειδὴ γε κινήσεως ἀρχὴν αὐτὸν εἶναι ποιεῖ· οὕτω γὰρ μόνως ἂν κινοίη ἀκίνητος ὢν καὶ κρατοίη ἀμιγῆς ὢν.

My conclusion is therefore that Anaxagoras innovates doubly with his conception of the constitution of *nous*; he innovates in relation to his predecessors, as Sedley rightly notes; and innovates as it were in relation to the future developments of the mind-body problem, by positing the radical type difference there is between the mental and the material as a necessary condition, rather than an insurmountable obstacle, for a type of interaction that is different from causation among physical

³⁰ I don't enter here in the debate about how to interpret Aristotle's theory of perception and in particular the so-called 'literalist' *versus* 'spiritualist' reading. My reading, briefly introduced here, differs from both. I give my interpretation and supporting arguments, as well as a critical discussion of the existing positions in the scholarly literature, in Marmodoro (2014).

³¹ See my reading of 'being unmoved' in the appendix to this chapter.

entities. Anaxagoras's stance is also directly influential on Plato (as we will see in chapter 3) and Aristotle.³² Further, there is something else that is significant about the way Anaxagoras conceives the role of *nous*, which Plato will make his own. *Nous* begins shaping the world from its state of primordial mixture. This entails that *nous*' design determines

³² In arguing for this thesis, I take a very different stance from Rhodes Pinto (2017) concerning the motivation and significance of the difference in constitution between *nous* and everything else there is in Anaxagoras's system. Pinto speculates that Anaxagoras, in thinking of how *nous* produces the cosmic vortex that separates out the Opposites, is influenced by a meteorological model such as that which explains the generation of whirlwinds, which involve the hot (aether) falling into the cold (air):

One sort of thing encounters a considerably different sort of thing, and a motion is *produced*. It thus becomes an intriguing possibility, although one by no means clear or certain, that something similar is the case for the cosmic vortex. Anaxagoras supposes that the encounter of considerably different things is *productive* of motion, and *nous* and the mixture are considerably different [. . .]. Such an understanding of the role of difference in *producing* motion has the distinctive advantage of providing a compelling explanation for Anaxagoras' depiction of *nous*. He takes care to point out that *nous* and the mixture are different kinds of *stuffs*. (2017: 8, my emphasis)

Pinto emphasizes how radical the difference between *nous* and mixture is, by comparison to the mere difference by degree of temperature that there is between aether and air:

The difference between *nous* and the mixture is of *an entirely different order* from the difference between aether and air, which, while being dominated by opposing qualities, nevertheless each contain a share of the other and indeed of every other ingredient. Thus the rotational motion that *nous* produces is so much stronger than that of whirlwinds. Only *nous* has a difference of such strength and permanence from everything else, and that is why Anaxagoras invokes *nous* for producing the cosmic vortex. (2017: 9, my emphasis)

Pinto's interpretation of the cosmic vortex however depends on an added coefficient, which is nowhere to be found in Anaxagoras's surviving texts. It is one thing to say that difference produces motion, but an altogether different thing to claim that the type of difference explains the type of motion produced. For example, Anaxagoras describes *nous* as being very different from physical stuff; but Pinto turns this into a different claim: that the greater the difference, the greater the motion produced—no explanation of why this should be the case is supplied by Pinto. Further, for Anaxagoras the movement produced by *nous* through the cosmic vortex is selective and intelligent. The spatial movement of the Opposites makes them preponderant in certain spatial locations, and this gives rise (by phenomenal emergence) to stuff of different kinds. Thus, in making *nous* the single source of cosmic movement, and hence giving *nous* the capacity to move specific Opposites spatially, via the vortex, Anaxagoras gives *nous* the ability to 'generate' stuff. *Nous* can move specific Opposites because it has the capacity for discernment and knows everything (as per B12: πάντα ἔγνων νοῦς). With this philosophical move, Anaxagoras combines movement (and thus change at the cosmic level) with intelligence. Pinto's interpretation would have to derive the fact that movement is intelligent from the qualitative differences between the properties of *nous* and the physical properties of the mixture of the Opposites; it is not clear that he can do this on his interpretation.

the very constitution of the world that is ‘created’. This is significant because it implicitly introduces the notions of *nous* as *designer*, and *nous* as an *efficient maker* of the world.³³ My hypothesis is that these two roles that Anaxagoras attributes to *nous*, of being the designer and the efficient maker of the world, influence Plato’s thinking. In a first phase, in the *Republic*, Plato’s transcendent Form of the Good serves as a (teleological) impersonal *designer* of the constitution of the world.³⁴ In a later phase, in the *Timaeus*, the *paradeigma* serves as the *design* of the world, and the *Demiurge* as the *efficient maker* of it; thus, Plato allocates the two roles that *nous* serves at once in Anaxagoras’s system to two different entities, the *paradeigma* and the *Demiurge*. (We will return to these issues in section 7.5 of chapter 7.)

2.7. Closing remarks

This and the preceding chapter introduced a number of Anaxagoras’s stances that, I argue, have influenced the development of Plato’s metaphysics. I briefly summarize them here. In Anaxagoras’s system there are (what we would call) tokens and types of properties: the types are the open sets,³⁵ including all of a type’s tokens there are; and the tokens are members of these sets. Further, Anaxagoras’s properties are causal powers, which exist as constantly activated, and operate with constitutional causal efficacy.

Anaxagoras, further, adopts in his metaphysics the *Contagion Principle* of causation; this principle will prove influential for both Plato’s and Aristotle’s theories. According to it, e.g., the Opposite Hot (*qua* set including all shares of the Hot there are) is itself hot, and is the

³³ We will see in the appendix to this chapter that Plato’s complaint (via Socrates) in the *Phaedo* concerns a third role that *nous* allegedly is supposed to have: that of *directing* what goes on in the world.

³⁴ I will not add here any discussion of the existing vast literature on the teleological role of the Form of the Good, but I will note that the Form of the Good by and large agreed by all scholars to be directly relevant to the *design* of the cosmos, according to Plato.

³⁵ Open sets, or possibly better, open regions which do not include their boundaries; a topological notion of an open region may be apt to capture what Anaxagoras’s Opposites are.

'source' from which the condition being hot is disseminated across objects in the world, for Anaxagoras through the spatial distribution of its shares. In Anaxagoras's system, qualitative change is merely spatial movement of shares or parts of the Opposites, and there is no (meta-physical) emergence of new properties or entities.

Anaxagoras reifies both properties and structure, as entities in the physical world, constituent parts of things. It follows that in his system, stuffs and objects are bundles of properties, qualified by the properties that they have most shares of within their constitution; structured objects like organisms additionally possess within their constitution a reified structure, a seed, as a constituent part.

A further innovative stance of Anaxagoras's is positing a mathematical principle—unlimited division of the Opposites—at the core of his ontology; in so doing, Anaxagoras implicitly endorses what we might call the *normativity of mathematics* on the physical world, which I will show, will be central to Plato's metaphysical thinking too.

Finally, his fundamental ontology admits of two categories of beings, which will be profoundly influential in the history of philosophy: physical ones (such as the Opposites, the seeds, and the vortex), and non-physical one (*nous*).³⁶

While all these tenets of Anaxagoras are important to understand the development of Plato's thought, Anaxagoras's most significant legacy to Plato is his account of property possession in terms of objects having parts of properties in them, within their own constitution. Parts of properties are parts of objects. Property possession is thus for Anaxagoras *constitutional overlap* between the property (the set) and the object. I will argue in the following chapters that Plato's primary model of participation follows (for the most part) Anaxagoras's conception of property possession—until the *Timaeus*. I will also show that some of Plato's most significant metaphysical innovations, whose study will occupy us in the chapters to follow, are those he reaches when extending Anaxagoras's model or departing from it, in addressing the problems that Anaxagoras's metaphysics cannot address for him.

³⁶ *Nous* is non-physical in the sense of not having any of the physical traits of the Opposites since it is pure and contains no Opposite in it (as per B12).

Appendix: What are Plato and Aristotle complaining about?

Interestingly, both Plato and Aristotle mostly express disappointment with Anaxagoras's views, instead of acknowledging their (I believe undeniable) intellectual debt to him. Of special interest to us is the fact that their declared disappointment is specifically with Anaxagoras's account of *nous*. To introduce in a nutshell what emerges from the main representative texts we will examine here, Plato and Aristotle find unsatisfactory that the good is supposedly part of Anaxagoras's ontology through the presence and operation of the *nous* everywhere, but the *modus operandi* of *nous* and therefore the presence of good in the world are left in fact unaccounted for by Anaxagoras. Plato in the *Phaedo* writes that,

[Socrates:] One day I heard someone reading, as he said, from a book of Anaxagoras, and saying that it is Mind that directs and is the cause of everything. I was delighted with this cause and it seemed to me good, in a way, that Mind should be the cause of all. I thought that if this were so, the directing Mind would direct everything and arrange each thing in the way that was best [. . .]. This wonderful hope was dashed as I went on reading and saw that the man made no use of Mind, nor gave it any responsibility for the management of things, but mentioned as causes air and ether and water and many other strange things. (97b8–98c2)

Ἄλλ' ἀκούσας μὲν ποτε ἐκ βιβλίου τινός ὡς ἔφη, Ἀναξαγόρου ἀναγινώσκοντος, καὶ λέγοντος ὡς ἄρα νοῦς ἐστὶν ὁ διακοσμῶν τε καὶ πάντων αἴτιος, ταύτῃ δὴ τῇ αἰτίᾳ ἦσθην τε καὶ ἔδοξε μοι τρόπον τινὰ εὖ ἔχειν τὸ τὸν νοῦν εἶναι πάντων αἴτιον, καὶ ἡγησάμην, εἰ τοῦθ' οὕτως ἔχει, τὸν γε νοῦν κοσμοῦντα πάντα κοσμεῖν καὶ ἕκαστον τιθεῖναι ταύτῃ ὅπῃ ἂν βέλτιστα ἔχῃ. [. . .] Ἀπὸ δὲ θαυμαστῆς ἐλπίδος, ὃ ἑταῖρε, ψόχῳ μιν φερόμενος, ἐπειδὴ προῖων καὶ ἀναγινώσκων ὁρῶ ἄνδρα τῷ μὲν νῷ οὐδὲν χρώμενον οὐδέ τινας αἰτίας ἐπαιτιώμενον εἰς τὸ διακοσμεῖν τὰ πράγματα, ἀέρας δὲ καὶ αἰθέρας καὶ ὕδατα αἰτιώμενον καὶ ἄλλα πολλὰ καὶ ἄτοπα.

Plato questions in this passage, via Socrates, the nature of *nous*' involvement in the world. His complaint is that an Anaxagorean explanation of why, e.g., Socrates stays in prison rather than escape, would be because Socrates' body is physically arranged thus and so in that location. Anaxagoras would have indeed said that, presumably, but those who know as much of Anaxagoras as we do, understand that such an explanation makes implicit reference to one type of control that *nous* has over the world, as we saw: physical movement through the vortex. In this sense, the Anaxagorean explanation Socrates offers makes implicit reference to *nous*' cosmic design responsible for the physical movements that the vortex causes. Socrates finds this explanation inadequate,

because what he was expecting to hear from Anaxagoras was that the reason why he is in prison is that he thought this was the good thing to do (with respect to Socrates's relation to the Athenian πόλις). This explanation, of course, wears its teleology on its sleeve. However, this is not so with the explanation that appeals to physical movement, where we do not have a full account of how the *cosmic* movement (the vortex) influences *local* movement (Socrates' staying in prison).

Could Anaxagoras give a satisfactory answer to Socrates's complaint in Plato's *Phaedo*, with the resources of his philosophical system? From fragments B11, B12, and B14 we know that *nous* has a second type of control on things in the world, in addition to the type of control exercised through the vortex. This is indicated by the fact that *nous* is in some things, i.e., animate beings, in a different way from the way it is everywhere. This second type of presence of *nous* in some things engenders the *direct* control that *nous* has on them. We can speculate that this type of control of *nous* on animate beings could provide the type of explanation Socrates is looking for, i.e., that his decision to stay in prison was good. We do not have enough textual evidence to develop fully this possible line of response to Plato, and establish whether Anaxagoras could have given it. Many of the details are missing: for instance, does goodness in one's decisions result from the control of the cosmic *nous* on one's own soul, or from the rational enrichment of the soul by the *nous* in it? That is, does goodness derive from one's own *nous*, namely, one's own capacity to plan one's life in good order? Although we do not have answers to these questions, we can see that Anaxagoras plausibly has the necessary resources in his ontology for developing the type of answer that Plato via Socrates was seeking.

Along the same lines, as Plato does via Socrates, Aristotle criticizes Anaxagoras in his *Metaphysics* for the fact that *nous* serves as a *deus ex machina* in Anaxagoras's system, thus:

[. . .] For Anaxagoras uses reason as a *deus ex machina* for the making of the world, and when he is at loss to tell for what cause something necessarily is, then he drags reason in, but in all other cases ascribes events to anything other than to reason. (985a18–21)

[. . .] Ἀναξαγόρας τε γὰρ μηχανῇ χρῆται τῷ νῷ πρὸς τὴν κοσμοποιίαν, καὶ ὅταν ἀπορήσῃ διὰ τίν' αἰτίαν ἐξ ἀνάγκης ἐστί, τότε παρέλκει αὐτόν, ἐν δὲ τοῖς ἄλλοις πάντα μᾶλλον αἰτιᾶται τῶν γιγνομένων ἢ νοῦν.

To address and understand Aristotle's complaint, and assess its fairness, we need to reconstruct Anaxagoras's account of *nous*' operations, and examine which shortcomings it might have. There are three issues for us to examine in further depth: (i) *nous*' control on things, (ii) *nous*' changes of mind, and (iii) the internal structure of *nous*.

A.1. *Nous*' control on things

In addition to the descriptions discussed in section 2.6, in B14 we read that *nous* is located in space, everywhere:

Nous, which always is, most assuredly is even now where all the other things also are, in the surrounding multitude, and in the things that were joined together and in the things that have been separated off.

ὁ δὲ νοῦς, ὃς αἰεὶ ἐστίν, τὸ κάρτα καὶ νῦν ἐστὶν ἵνα καὶ τὰ ἄλλα πάντα, ἐν τῷ πολλῷ περιέχοντι καὶ ἐν τοῖς προσκριθεῖσι καὶ ἐν τοῖς ἀποκεκριμένοις.

Although not explicitly stated, we can reasonably assume that the physical condition of *nous* being everywhere indicates that for Anaxagoras, physical compressence of *nous* with all the things must be a condition of *nous*' control of them (and knowledge of them). Additionally, in B11 we read that 'there are some things in which *Nous*, too, is present' (ἐστὶν οἷσι δὲ καὶ νοῦς ἐνι). It is plausible to infer from B11 and B14 that *nous* is present in some things in a different way from that in which it is present in everything. In B12, Anaxagoras indicates that *nous* has a special relation to some things: 'and *nous* has control over all things that have soul, both the larger and the smaller' (καὶ ὅσα γε ψυχὴν ἔχει καὶ τὰ μείζω καὶ τὰ ἐλάσσω, πάντων νοῦς κρατεῖ). Since *nous* sets in order all things that were, are, and will be, why does Anaxagoras feel he has to tell us that it has control over all things that have soul? Presumably, because the control *nous* has over things with soul is of a different kind than the control it has over everything else. In fact, it must be not only of a different kind, but also additional to the control it has over everything. But we are not told anything more on the nature of this type of control in the extant texts.

A.2. *Nous*' changes of mind

The extant textual evidence indicates that for Anaxagoras there are changes taking place in *nous*. For instance, when *nous* 'began to move' things, and 'moved' things (B13); when *nous* started the vortex (B12); or when *nous* 'set [things] in order' (B12); and *nous* 'has control' over animate things (B12). What is it that happens when these changes occur in *nous*? On account of Anaxagoras's general stance regarding change, we would not expect any of them to be a qualitative change, but only change involving movement. However, we saw that Aristotle says that for Anaxagoras, *nous* is an unmoved mover (see *Physics* 256b24–7, quoted at p. 43). I subscribe to Aristotle's reading of Anaxagoras, but want to make a conceptual distinction between two kinds of unmoved mover: there are unmoved movers that have no movement at all, and unmoved movers that have self-movement, so they are unmoved in the

sense that nothing else moves them. I believe that Anaxagoras's *nous* is of the second kind; for he describes it as 'self-ruling' (B12). We can therefore conclude that *nous*' changes that initiate its operations would need to be movement within *nous*, and that this movement would need to be powered up by *nous* itself. We do not have however an explanation from Anaxagoras of how this would be achieved.

A.3. The internal structure of *nous*

It is plausible to assume that Anaxagoras conceives of the unmixed, pure nature of *nous* as being the opposite of the mixed and impure natures of everything else in the universe. That *nous* is purest indicates that, whatever its nature is, it is what it is through and through in its constitution. Anaxagoras claims this explicitly in B12: '*Nous* is all alike, both the greater and the smaller' (νοῦς δὲ πᾶς ὁμοίός ἐστι καὶ ὁ μείζων καὶ ὁ ἐλάττω, translation modified from Curd's). That *nous* is all alike, combined with the fact that it not characterized by any Opposites, suggests that *nous* is uniform, at least with respect to its constitution. Yet, *nous* has cognitive powers in virtue of which it knows and discerns everything, and thus exercises control in the universe (as we saw in B12). How does *nous* perform different cognitive activities? Minimally, *nous* needs to be a bundle of cosmic and cognitive powers. Since there are hierarchies and dependencies among the operations of these powers, there must be some structure in the constitution of *nous* underpinning them. But Anaxagoras is silent on these issues, at least in the extant texts.

Returning now to our opening issue: we saw that the good is part of Anaxagoras's ontology through the presence and operation of the *nous* everywhere; but the *modus operandi* of *nous* on which the dissemination of good in the world depends is indeed less explicit (and less well explained) than it is in subsequent teleological systems, such as, e.g., Plato's or Aristotle's. I submit that this is what Plato and Aristotle find unsatisfactory in Anaxagoras's explanation of the good: Plato with particular focus on the (presumed) lack of teleology in Anaxagoras's system, and Aristotle with particular focus on the sketchy nature of Anaxagoras's account of *nous*' operations. Anaxagoras posits *nous* everywhere in the world, but does not explain the 'mechanism' of its operation on things in the world, nor gives a full account of the internal structure that would enable *nous* to perform its cognitive functions. In conclusion, Plato's and Aristotle's disappointment seems to some extent fair with respect to *nous*, but confined to this specific issue in Anaxagoras's system. Their silence on the rest may be read as an indication of philosophical appreciation.

3

Plato's Forms as powers

3.1. Introduction

This chapter introduces Plato's fundamental entities, the Forms. Building on a vast literature on Plato's theory of Forms, I will focus here on some aspects of the theory that are most relevant to this book's overarching argument: Plato's view that the Forms are causal powers, and his innovative stance that they are transcendent entities. In essence, my claim is that Plato's Forms are *transcendent powers*. This raises the (difficult) question of what kind of causal efficacy transcendent entities can have on the physical world. I will argue that Plato thinks of the causal efficacy of his Forms as *normativity* governing how objects in the world are qualified. I will further indicate what sort of considerations plausibly motivated this stance of his.

In investigating these aspects of Plato's theory of Forms, I will bring into relief significant conceptual continuities (and discontinuities) between Plato's Forms and Anaxagoras's Opposites. These we will be able to recognize now, because of the analysis developed in the previous two chapters of Anaxagoras's metaphysics. By showing that Plato's Forms are causal powers having constitutional causal efficacy, like Anaxagoras's Opposites, I will begin to build the case for what I call Plato's Anaxagoreanism. A number of considerations support my case. To start with, there are references in ancient sources that point to a derivative connection between Plato's and Anaxagoras's metaphysics of participation. We know from Aristotle (*Met.* 991a14–9) and Alexander of Aphrodisias (*In Met.* 97,27–98,24) that Eudoxos in particular offered an interpretation of Plato's theory of Forms in Anaxagorean terms.¹

¹ W. Mann gives some helpful references to the ancient sources that point at what I call Plato's Anaxagoreanism (2000: 118, ft. 75). Further, in unpublished work, 'Anaxagoras in Plato's *Parmenides*' (read at the *International Plato Society* meeting in Paris, 15–19 July 2019), Filippo Forcignanò (who kindly gave me a copy of his work) draws evidence

My case however will be built here on philosophical rather than historical/testimonial grounds, starting with Plato's conception of the Forms as powers with constitutive causal efficacy.

3.2. The Eleatic Principle

In the *Sophist* (247e1–2), Plato gives the definitive criterion for an ontology comprising only powers, with what has become known, among scholars of ancient philosophy as well as modern metaphysicians, as the *Eleatic Principle*:

EP: Those things which amount to nothing other than power (δύναμις).

This principle, taken as the definition of being, entails that Plato is committed to the view that the Forms, the *par excellence* beings in his ontology, are powers.² Powers had not been explicitly conceptualized before Plato, even if we saw that Anaxagoras posits the Opposites, which we classify as powers, among the building blocks of his ontology. In the *Republic*, Plato provides the first explicit definition of powers in ancient Greek thought, which I quote in full:

In the case of a power, I use only what it is set over and what it does, and by reference to these I call each the power it is: What is set over the same things and does the same I call the same power, what is set

from the *Parmenides* and from other secondary sources to show that Anaxagoras is very much 'present' in the *Parmenides*, which Plato signals, according to Forcignanò, by means of emphasizing the provenance of Cephalus from Clazomenae and of introducing the issue of eponymy (130e–131a) between *f*-things and the Form *F*, which also points clearly to Anaxagoras, according to Forcignanò. With respect to specifically to Eudoxos's Anaxagoreanism with Plato's Academy, the most developed interpretation to date is to my knowledge von Kurt (1926) (I am grateful to Klaus Corcilius for this reference), discussed also in Forcignanò (2017: 152 and ff.).

² The alternative way of taking EP is as giving a *mark* of being, rather than a *definition* of it. For a recent examination of the two alternatives, which concludes in support of the definitional reading, which I too endorse, see Leigh (2010).

over something different and does something different I call a different one. (477d1–5)

δυνάμεως δ' εἰς ἐκεῖνο μόνον βλέπω ἐφ' ᾧ τε ἔστι καὶ ὁ ἀπεργάζεται, καὶ ταύτῃ ἐκάστην αὐτῶν δύναμιν ἐκάλεσα, καὶ τὴν μὲν ἐπὶ τῷ αὐτῷ τεταγμένην καὶ τὸ αὐτὸ ἀπεργαζομένην τὴν αὐτὴν καλῶ, τὴν δ' ἐπὶ ἑτέρῳ καὶ ἕτερον ἀπεργαζομένην ἄλλην.

For example, the Form of Heat is 'set over' physical objects in nature, and making them hot is what it does. Generalizing, Plato defines powers in terms of *what they can do*, leaving open which criteria may be used to describe it. It is important to note how Plato's definition of power differs in significant ways from Aristotle's. For Aristotle, there is a primary sense of potentiality, from which the other senses are derived. It is the capacity *to bring about change*, as he writes in the *Metaphysics*:

All potentialities that conform to the same type are starting points of some kind, and are called potentialities in reference to one primary kind, which is a starting point of change in another thing or in the thing itself *qua* other. (1046a9–10)

ὅσαι δὲ πρὸς τὸ αὐτὸ εἶδος, πᾶσαι ἀρχαὶ τίνες εἰσι, καὶ πρὸς πρώτην μίαν λέγονται, ἥ ἐστὶν ἀρχὴ μεταβολῆς ἐν ἄλλῳ ἢ ἄλλο.

Aristotle identifies the criterion that is to be used to describe what powers can do as their manifestation or exercise, which he construes in terms of change. (Recall that by contrast Plato leaves open which criteria may be used to describe what powers can do). Aristotle's approach has become orthodoxy since his time; it is still the mainstream today. It has however the philosophical disadvantage of placing powers 'behind the veil' of their manifestation, which keeps hidden the nature and internal structure of a power. My point is that by defining a power through its manifestation, as we do, following Aristotle, we never reach, epistemologically, the nature of the power itself; we know 'about' a power only when causally interacting with it/its exercise. But what if never manifesting? We have no conceptual means to define and

know unmanifested powers, and yet such powers are assumed to exist. This is an open problem in current metaphysics. Plato's approach in defining powers (in the passage quoted earlier, from the *Republic*) does not provide any solution, but at least leaves open the possibility that what a power can do may be defined differently than solely through its manifestation.

The preceding discussion of Anaxagoras's Opposites (in section 1.3 of chapter 1) made us aware that the question that exercises modern interpreters studying ancient power ontologies concerns how powers can exercise their powerfulness while remaining unchanged, without transitioning from inactivity to activity. I argued that the conceptual difficulties that *we* find, in recognizing that Anaxagoras's Opposites are powers in a Parmenidean world that does not admit of change (or, more accurately, that reduces any other type of change to spatial movement), stem from *our* modern, post-Aristotelian conception of powers. For Aristotle, causal powers are (types of) properties defined by the (type of) change they enable their possessor to suffer or bring about.³ They may exist as inactive powers in potentiality or as actively exercising powers; and the transition from one state to the other can also be considered a change. This way of thinking about powers, which is so familiar to us, was however not the way pre-Aristotelians thought; it is rather a theoretical acquisition that we owe to Aristotle. Plato's Forms are eternal immutable entities. His Forms, like Anaxagoras's Opposites and unlike Aristotle's powers, cannot undergo any change when exercising causal efficacy. So the question to address on my interpretation is how they exercise their efficacy *qua* causal powers.

I claim that Plato's Forms act the way Anaxagoras's Opposites do. First, they exist as powers that are continuously exercising, with no transition (given their immutability) from being inactive to being active. Second, we saw that for Anaxagoras the presence (in preponderance) of an Opposite O in an object qualifies the object with the property of being *o*. Similarly, the presence of a Form F in an object qualifies the object with the property of being *f*. That is to say, Plato

³ When exercising, they change the causal profile of the world, either by an intransitive change (e.g., apples ripen), or by changing something else (when a piece of coal heats the surrounding air), or both (when sugar melting in water sweetens it).

endorses the same account as Anaxagoras (with the important difference we shall examine in section 3.4. that Plato's Forms are transcendent powers, whilst Anaxagoras's Opposites are physical powers); the Forms *qua* powers are difference-makers in the world through their *presence*: they have a qualitative causal role that follows primitively from their constitutional causal role.

Let me now briefly comment on where I believe the strength of my interpretation of the Forms as causal powers lies, in relation to the variety of alternative interpretations that exist in the literature.⁴ Speaking generally, the existing alternative interpretations neglect what I have been arguing for thus far, namely that there is strong continuity between Plato's and Anaxagoras's metaphysical systems: when Plato posits that what is, is power, he is giving a metaphysical criterion for what Anaxagoras had assumed in his own system (at least with respect to the fundamental entities). As I see it, Plato's position that the Forms are causal powers is embedded in a more general way of thinking that precedes him and even Anaxagoras (namely, the so-called Ionian tradition), which continues after them with Aristotle and beyond; of this we should not lose sight. Any interpretation that attempts to explain the Forms as causes, without taking into account the Anaxagorean background to Plato's *Eleatic Principle*, is bound to understand it only in part, notwithstanding its scholarly merits.

As we will see in the following section, commentators who have addressed the problem of the causal role of Plato's Forms divide broadly speaking into two camps. On the one hand, there are those who take their causal role to be *explanatory*; on the other, those who try to find a *metaphysical* role for the Forms to play. Generally speaking, those in the latter group try to develop their interpretations under the constraints that the Forms need to remain *changeless* while acting as causes, and

⁴ There is a wide range of excellent scholarly interpretations of Plato's Forms as causes. My selection of what to discuss in this chapter is 'minimalist', and might strike the reader as arbitrary; on the other hand, any selection in this case would have been excluding much that would be worthwhile to discuss, and a selection is needed for reasons of space and focus in the chapter. There are both self-standing journal publications and sections of monographs that are relevant, and not only among the Anglo-American literature, but globally. Some among the many are: Taylor (1969), Vlastos (1969), Stough (1976), Annas (1982), Fine (1987 reprinted in 2003), Sedley (1998), Sharma (2009), Bailey (2014).

that the Forms need somehow to account for *efficient causation*. This is of course a simplified and summary description of the state of the art, but serves here to introduce an interpretation of the Forms as causes which I want to specifically distinguish from mine, namely the one developed by Fiona Leigh (2010 and 2012). Leigh's work is particularly relevant to mine for two reasons: on the one hand she dismisses outright the possibility that Plato's Forms may be understood as causal powers, and on the other she finds some aspects of the metaphysics of powers helpful to develop her own interpretation (which falls in the second of the two camps distinguished previously). Leigh writes:

If Forms are powers, then perhaps they are relevantly similar to dispositions, which have been supposed in recent work in contemporary metaphysics to possess causal efficacy, and yet which need not undergo change or alteration. (2012: 256)

However, she claims,

[...] I want to reject [...] that 'a proto-dispositionalist' conception of causation can be seen at work in Plato's treatment of Forms as causes. (2012: 240)

Leigh gives no specific reference for the contemporary account of dispositions(/powers) she is working with, which, considering the variety of views in the literature, makes her claim underspecified if not unjustified.⁵ I will not engage in assessing this aspect of her approach. Rather,

⁵ Since Leigh emphasizes that she thinks of dispositions as capable to exercise causal efficacy without changing, it is plausible to assume that she is thinking of the mainstream account of powers I introduced in section 1.3 of chapter 1, according to which, when a power manifests, it is replaced by a new power (in potentiality), while the original power ceases to be. Precisely on account of this way of conceiving the manifestation or exercise of a power, this contemporary theory of powers has been shown in the literature to be—as a theory of powers—prey to fatal objections; it would not be charitable to Plato to saddle him with it, as his own view, if we can read Plato differently. Further, and more pressing here, the ceasing to be of the original power and the coming about of a new one, when the original one manifests, cannot possibly be what happens to Plato's Forms, which are eternal. The conception of dispositions Leigh is appealing to, which manifest without changing, is therefore problematic. (If she intends to appeal to a different one, the reader would need to know which precisely.)

I will concentrate on her understanding of dispositions/powers. Leigh writes:

Nonetheless, there is, I believe, one conceptual feature of contemporary dispositionalist analyses of causation that could prove useful for understanding Forms as *changeless causes* in Plato—the idea that the *realization or manifestation of some property tracks a causal relation*. What, then, is manifested or realized when a Form *acts on* a participant as a cause? The answer, I suggest, is some particular structure. A particular complex structure belongs to each Form as its nature, and specifies what it is to have the property in question. This structure is what is manifested or realized in those individual cases where something participates in the Form. [...] The structure is realized or manifested in the Form's participants in so far as the participant conforms to this structure. If it conforms to the structure, then the structure belongs to each participant, as the underlying structure of the relevant property it possesses as an attribute. (2012: 257, my emphasis)

The core idea that Leigh appears to want to borrow from the metaphysics of powers/dispositions, is that of 'tracking': the manifestation of a disposition tracks a causal relation. This suggests that the manifestation of a disposition 'reveals' to us, or informs us of, a causal occurrence; to illustrate the point (which Leigh does not), the manifestation of a glass's fragility informs us that the glass has been struck and is broken, and in this sense 'tracks' a causal relation between the glass and what struck it. But this 'tracking' does not tell us anything about the metaphysics of causation and the nature of the causal relation. The problem with Leigh's proposed interpretation becomes more acute when she claims that the changeless Forms 'act' on their participants: how does thinking of their causal action as being tracked by the manifestation of a disposition help our understanding? Leigh makes a further claim: 'What, then, is manifested or realized when a Form acts on a participant as a cause? The answer, I suggest, is some particular structure.' But now the *manifesting* of a disposition becomes the *realizing* of a structure: the Form manifests when realizing a particular structure in the world, and this manifestation 'tracks' the Form's causal

action on the world (while the Form remains unchanged). The logical (and metaphysical) connections between these various claims remain unexplained in Leigh's work. A final point: a Form's manifesting appears to be for Leigh merely a matter of reaching *conformity* between the Forms and the world: 'The structure is realized or manifested in the Form's participants in so far as the participant conforms to this structure'. How does conformity come about? How is the 'action' of a Form, as the Form is realized, related *metaphysically* to the conformity of the object to the Form's structure? In conclusion, it is difficult to see any explanatory benefit in Leigh's interpretation of Plato's Forms as causes, via her use of the notions of disposition and manifestation. If she thinks that interpreting the Forms *tout court* as powers is problematic, she ought to show why; and if she thinks there are some aspects of the metaphysics of powers that are selectively helpful to understand how Forms are causes, she has not shown us how.

My own stance is that Plato's Forms exist as powers that are continuously exercising, in the sense that they undergo no transition (given their postulated changelessness) from being inactive to being active. Just as for Anaxagoras the preponderant presence of an Opposite O in an object qualifies the object as being *o*, similarly for Plato the presence of a Form F in an object qualifies the object as being *f*. That is to say, Plato endorses an Anaxagorean position, that the Forms *qua* powers are difference-makers in nature by their presence in the constitution of things. The Forms are powers with constitutional causal efficacy.

3.3. The Forms as causes

Plato's Forms serve as causes in his system. This is well attested in Plato's works, and is also much discussed in the relevant scholarly literature. I will here only briefly introduce one of the most discussed passages, where Plato is explicit that the Forms are causes, from the *Phaedo*:

I am going to try to show you the kind of cause with which I have concerned myself. [. . .] I assume the existence of a Beautiful, itself by itself. [. . .] I think that, if there is anything beautiful besides the Beautiful itself, it is beautiful because of nothing other than that it

partakes in that Beautiful; and I say so with respect to every property. [. . .] But I simply, naïvely and perhaps foolishly cling to this, that nothing else makes that thing beautiful other than the presence of, or the communion with the Beautiful, or in whatever manner or way [this is achieved]; for I do not have a firm view [on how this comes about]; but I hold that all beautiful things become beautiful by the Beautiful. (100b–d, abridged and in a slightly modified translation)

ἔρχομαι [γὰρ] δὴ ἐπιχειρῶν σοι ἐπιδειξασθαι τῆς αἰτίας τὸ εἶδος ὃ πεπραγμάτευμαι [. . .] ὑποθέμενος εἶναι τι καλὸν αὐτὸ καθ' αὐτὸ [. . .] φαίνεται γὰρ μοι, εἴ τί ἐστιν ἄλλο καλὸν πλὴν αὐτὸ τὸ καλόν, οὐδὲ δι' ἐν ἄλλο καλὸν εἶναι ἢ διότι μετέχει ἐκείνου τοῦ καλοῦ· καὶ πάντα δὴ οὕτως λέγω [. . .] τοῦτο δὲ ἀπλῶς καὶ ἀτέχνως καὶ ἴσως εὐήθως ἔχω παρ' ἐμαυτῷ, ὅτι οὐκ ἄλλο τι ποιεῖ αὐτὸ καλὸν ἢ ἡ ἐκείνου τοῦ καλοῦ εἴτε παρουσία εἴτε κοινωνία εἴτε ὅπη δὴ καὶ ὅπως †προσγενομένη· οὐ γὰρ ἔτι τοῦτο δισχυρίζομαι, ἀλλ' ὅτι τῷ καλῷ πάντα τὰ καλὰ [γίνεται] καλὰ.

In essence, Plato claims here that the Form of Beauty makes a sensible particular *x* beautiful, in some sense of 'making'; i.e., the Form is the cause of *x*'s beauty, or is responsible for *x*'s beauty, in virtue of *x*'s partaking in that Form. How the Forms can be causes that make a difference in the sensible world is a question that has engaged Plato's readers since antiquity, and *in primis* Aristotle. As briefly mentioned in the previous section, scholars who have addressed the problem of the causal role of Plato's Forms divide, broadly speaking, into two camps. On the one hand, there are those who explain the causal role of the Forms as *explanatory*;⁶ on the other, those who try to give it a metaphysical account, wherein the Forms remain changeless and yet have an *efficient* causal role to play. In the previous section of this chapter, I argued for a metaphysical account of the Forms as (Anaxagorean) causal powers, and I distinguished my interpretation from one that might be thought to be similar to mine in approach, namely the one offered by Fiona Leigh. In this section I want to enrich our understanding of Plato's

⁶ Julia Annas (1982)'s work has been seminal for this line of interpretation, of which many variants have been developed in the literature.

stance that the Forms are causal powers, by examining why the *Eleatic Principle* and generally the causal role of the Forms in Plato's system have proven difficult for scholars to interpret.

I argue that for Plato, speaking generally, *causes are powers to make* [something in the world] *different* (δύναμιν εἰς τὸ ποιεῖν ἕτερον, *Sophist* 247e1). My claim is that this is a very sophisticated criterion that Plato set for causes as difference-makers, because it enables him to then classify as causes both Forms in the World of Being and things in the World of Becoming. This is what Plato does explicitly, leading up to the crucial passage where the *Eleatic Principle* is expressed in the *Sophist*,

[. . .] They need to say something about what's common to both it [namely, that which is that does not have a body] and the things that do have body, which they focus on when they say that they both are. (247d1–3)

[. . .] τὸ γὰρ ἐπὶ τε τούτοις [τοῖς ἀσωμάτοις] ἅμα καὶ ἐπ' ἐκείνοις ὅσα ἔχει σῶμα συμφυὲς γεγονός, εἰς ὃ βλέποντες ἀμφοτέρα εἶναι λέγουσι

Both what has body and what does not have body are, i.e., exist; and therefore are difference-makers. The examples of incorporeal entities that Plato gives here are the Forms of Justice, Wisdom, and Virtue (247b1). However, although the role of both these types of entity, the incorporeal and corporeal ones, is causal, they are two thoroughly different kinds of difference-makers: Forms are difference-makers *constitutively*; while sensible things are difference-makers *efficiently*. With the *Eleatic Principle* Plato proposes a criterion of existence that applies to both types of entity, the incorporeal and the corporeal alike (see 247d2):

[i] everything which possesses any power of any kind, [i.i] either to make different anything of any nature, [i.ii] or to be affected even in the least degree by the slightest cause, though it be only on one occasion, has real existence. [ii] For I set as a definition of being, that it is nothing else but power. (247d7–e4, slightly modified translation)

[i] λέγω δὴ τὸ καὶ ὁποιαοῦν τινα κεκτημένον δύναμιν εἶτ' εἰς τὸ ποιεῖν ἕτερον ὁτιοῦν πεφυκὸς εἶτ' εἰς τὸ παθεῖν καὶ σμικρότατον ὑπὸ τοῦ φαυλοτάτου, κἂν εἰ μόνον εἰς ἅπαξ, πᾶν τοῦτο ὄντως εἶναι: [ii] τίθεται γὰρ ὅρον ὀρίζειν τὰ ὄντα ὡς ἔστιν οὐκ ἄλλο τι πλὴν δύναμις.

It is important to realize here that the disjunction that Plato builds in [i] is not between efficient causes that produce or that suffer change, as systematically assumed; Plato's language shows us that his thought is more complex than this. Plato is showing that entities in the World of Being and entities in the World of Becoming exist *qua* powerful. However, Forms are powerful in a different way than physical things are powerful. Forms are *constitutional causes*, while physical things are *efficient causes*. Plato's disjunction covers both cases, since both types of powerfulness exist: entities have real existence if they are powerful, but Forms are powerful in a different way than physical things are. Forms are powerful by making a difference in the sensible world by their *constitutional* presence—by the 'possession and presence' of Forms in objects (see *Sophist* 247a); while physical things are powerful by making a difference to the environment by their *efficient* impact. So, Plato's disjunction, covering every type of powerful entity ('either to make different anything of any nature, or to be affected . . . by the slightest cause'), is between [i.i] what can make a difference at all to anything, and [i.ii] what can suffer change. Now, [i.i] Forms can make a difference, constitutionally, and sensible things in the world can make a difference, efficiently; and [i.ii] only sensible things can suffer difference (/suffer efficient change)—Forms cannot suffer any type of difference. So, [i.i] includes Forms as well as sensible things, i.e., constitutional causal powers and efficient causal powers; while [i.ii] includes only sensible things, i.e., only (passively) efficient causal powers.

Commentators read Plato's *Eleatic Principle* in [ii] as claiming existence only for efficient causes. I argue that this approach has been unhelpful, and has led scholars to try to find ways in which Forms can be thought of as being efficient causes. As representative of this approach, Gail Fine, for example, assumes that the Forms have a causal role in efficient causation, which she explains thus: 'although forms are not E-causes [i.e. efficient causes], they are causally relevant by being constituents of events [of efficient causation]' (2003: 390). How,

then, are Forms relevant? How do they, as constituents of events of efficient causation, contribute to the causal process? I submit Plato's metaphysics offers no answer to such questions; and it is misguided to place on him the burden to address them. Furthermore, it would be very surprising if the causal role of the Forms were explained by Plato through the Forms' involvement in '*becomings*' of efficient causation within the sensible world. By contrast, on my interpretation, the causal role of the Forms is not due to their contribution to something that takes place in the World of Becoming; rather, their causal role is *constitutional* for the World of Becoming, which gives the Forms and their World of Being a foundational role to play for the very constitution of the World of Becoming. On my proposed understanding of their 'causal role', the Forms play a constitutional causal role in the World of Being, too, where there are no events of becoming, but where some Forms partake of others (as we will see in chapter 6).

The confusion much scholarly literature displays is not a historical, or linguistic accident, as it were. Aristotle is to blame for it, because he criticizes Plato for claiming that Forms are causes, by arguing that Forms are not *efficient* causes:

For if the Forms are causes, why is their generating activity intermittent instead of perpetual and continuous—since there always *are* participants as well as Forms? Besides, in some instances we see that the cause is other than the Form. For it is the doctor who implants health and the man of science who implants science, although Health itself and Science itself are as well as the participants: and the same principle applies to everything else that is produced in accordance with a capacity. (*Generatione et Corruptione*, II.9, 335b18–24, emphasis in the original)

Εἰ μὲν γάρ ἐστιν αἷτια τὰ εἶδη, διὰ τί οὐκ αἰεὶ γεννᾷ συνεχῶς, ἀλλὰ ποτὲ μὲν ποτὲ δ' οὐ, ὄντων καὶ τῶν εἰδῶν αἰεὶ καὶ τῶν μεθεκτικῶν; ἔτι δ' ἐπ' ἐνίων θεωροῦμεν ἄλλο τὸ αἷτιον ὄν· ὑγίειαν γὰρ ὁ ἱατρός ἐμποιεῖ καὶ ἐπιστήμην ὁ ἐπιστήμων, οὐσης καὶ ὑγείας αὐτῆς καὶ ἐπιστήμης καὶ τῶν μεθεκτικῶν· ὡσαύτως δὲ καὶ ἐπὶ τῶν ἄλλων τῶν κατὰ δύναμιν πραττομένων.

I showed that Plato offers a metaphysical account only for constitutional causation in his system, but *not* for efficient causation. Both Plato and Anaxagoras do make reference to instances of efficient causation, even if they cannot explain it in their ontology. We saw in section 1.3. of chapter 1 that in B16, Anaxagoras refers to the impact of the Cold on earth, compacting it into stones; but there is no explanation of such a type of impact in Anaxagoras' system. Plato also talks of causal interaction; he speaks generally, in the passage from the *Sophist* quoted earlier, of something being affected by something else (παθεῖν, 247e1); but his (pre-*Timaeus*) metaphysics cannot explain how this could happen. It is not until Aristotle that we find a metaphysics of efficient causation. Aristotle introduced a conception of efficient causation which has determined what we mean by 'cause' today and is still operative in our time. He explained efficient causation as *interaction* between respectively qualified entities, e.g., fire and iron, being capable of emitting heat and capable of receiving heat respectively. Everyday experience presents us with plenty of examples of such interactions; however, explaining philosophically what causal interaction is, is eminently challenging for us, as it was for the ancients. I argue that Platonic causation is difference-making, not efficient interaction. Neither Anaxagoras nor Plato (pre-*Timaeus*) had developed an account of efficient causation, by which I mean that they had not developed the conception of causation by interaction.

3.4. Transcendent powers

I argued for Anaxagoras's influence on Plato's conception of the Forms, with focus on the Forms' nature *qua* causal powers and their efficacy. But while Anaxagoras's powers are only physical properties, the range of properties (and hence powers) that Plato admits in his ontology is much wider than Anaxagoras's—whilst Anaxagoras admits at the foundation of his world only physical Opposites, such as Hot/Cold or the Soft/Hard, as properties, Plato posits also Forms of such opposites as moral values, such as justice, and aesthetic values, such as beauty, etc. In some contexts, Plato's criterion for positing Forms appears

liberal to the point of encompassing the referents of all predicates, if we take at face value what he writes in the *Republic*. He writes:

We are, I suppose,⁷ in the habit of positing some one Form for each group of many things to which we apply the same name. (596a6–8)⁸

εἶδος γάρ πού τι ἐν ἑκάστων εἰώθαμεν τίθεσθαι περὶ ἕκαστα τὰ πολλά, οἷς ταῦτόν ὄνομα ἐπιφέρομεν.

On this criterion, a single Form is posited for each group of entities in the world of our experience, 'the many', to which we apply the same name. (There is no reason to think that the principle is intended to be restricted, even if in the text surrounding the quoted passage gives examples of artefacts only.)

There is however a much more significant departure that Plato makes from Anaxagoras, in addition to expanding the range of types of properties admitted in his ontology—a departure that will influence the history of metaphysics to our present day. As I have already argued, Plato conceives of the Forms as *transcendent*, rather than

⁷ I take the particle *πού*, which I translate 'I suppose', as meant to convey 'assumed diffidence, by a speaker who is quite sure of his ground', according to one of the uses that Denniston reports (1991: 490–1).

⁸ There are two possible ways of reading this passage. One can take *τίθεσθαι* [*εἶναι*] in an existential sense, i.e., 'we posit that there is an εἶδος', or in a predicative sense, i.e., 'we posit that the εἶδος is one'. The text allows both readings. The majority of the scholars adopt the existential reading, and so do I. *Contra* the majority of the interpreters, Smith (1917) argues for the predicative reading, which Burnyeat too finds preferable (1989: 102). More recently the two opposing positions in the debate have been furnished with new arguments by Sedley (2013) in support of Smith (1917), and José Edgar González-Varela (2019, online pre-print publication) in support of the mainstream reading. I will not engage here with the arguments in support or against the reading I adopt, but will only mention that there are various textual reasons to be found in the passage itself to prefer the existential reading to the predicative one, and further evidence, external to the passage in question, is to be found in the *Phaedo* (79a6–7), where *τίθεσθαι* is used in an existential sense for positing δύο εἶδη τῶν ὄντων. Furthermore, on the existential reading, as we will see, Plato's claim is a type of *One Over Many* assumption; whilst on the predicative reading Plato mentions as a familiar principle the claim which will be actually the conclusion of his argument, namely that each Form is unique. Although I agree with Fine (1993: 305) that either of the two claims would fit the context, I believe it is likely that Plato would have mentioned the principle he will use rather than state at such an early stage of the argument the conclusion. This consideration adds further support to the existential reading.

physical entities, in a 'place beyond the heaven', (ὑπερουράνιον τόπον, see *Phaedrus* 247c; see also τὸν νοητὸν τόπον in *Republic* 517b–c).⁹ Plato 'elevates' the status of Anaxagoras's Opposites to that of non-physical and merely intelligible entities, whose presence in material objects, nevertheless, qualifies the objects thus-and-so.¹⁰ It follows that for Plato, for example, a physical fire is hot in virtue of the presence of the transcendent Form of Heat in it. This is a very surprising stance to take; why would Plato think in these terms? There is much to be said about what might motivate Plato's move and why it is a philosophically attractive move; but I will not attempt to engage with this topic here. Rather, I will confine myself to a specific aspect of it, which I believe must have been salient to Plato in his thinking about the Forms. My discussion will focus on the normativity of the transcendent, because this is relevant to the causal efficacy of Plato's Forms.¹¹

I suggest that Plato assumes that the transcendent has *normative governance* over the physical world, on account of the fact that geometry, mathematics, astronomy, and suchlike sciences offer (co-gent) models of the normative governance of abstract entities over physical ones. It is well known and much discussed in the relevant secondary literature that Plato was interested in the mathematics and geometry of his time, and from a certain point onward in his philosophical development he was very much influenced by these sciences.¹² It was already well understood in Plato's time that concrete physical geometrical figures have the geometrical properties they have in virtue of the respective perfect geometrical figures

⁹ For an opposing view, see, e.g., Fine (1984 and 1986).

¹⁰ Brentlinger (1972) offers an interpretation of Plato's reasons for departing from the Anaxagorean conception of physical properties to their conception as transcendent properties, with which I disagree. I discuss Brentlinger's views in section 6.1 of chapter 6.

¹¹ Although this too would be very relevant to Plato's conception of the Forms, I am not here interested in the perfection that the transcendent can enjoy, as, e.g., in the case perfect paradigms of triangularity or beauty, because this is less relevant if at all to the issue of the causal efficacy of the Forms.

¹² I cannot here pay justice to Plato's views on mathematics and geometry in any complete and accurate way; this would be beyond the scope of the present study. My aim here is only to point the reader to a few representative passages on which I draw for my argument. Among the existing secondary literature, the reader might find of interest, among other resources: Heath (1921), Burnyeat (1987), Fowler (1987), Vuillemin (2001), Rashed (2018).

having the properties they have. This, I submit, motivates Plato's certainty that the transcendent can govern the physical. If a square's angles are 90 degrees each, because the perfect square's angles are 90 degrees each, it seems eminently sensible that this generalizes to all other properties of paradigms in the intelligible realm. This, I believe, must have been a significant motivation for Plato's stance that transcendent entities that are responsible for things in the world being qualified as they are.¹³

Here I will limit myself to referencing two representative passages from the *Republic* that show that it seems uncontroversial to Plato to posit that transcendent entities govern the physical world—he takes this stance without feeling the need to offer arguments for it, or even to make it explicit in his writings. For instance, he notes that geometry has a vital role to play in practical matters, as well as in ethical and philosophical matters. He finds it straightforwardly true that some knowledge of geometry serves warfare strategy:

In so far as it pertains to war, it [i.e., geometry]'s obviously appropriate, for when it comes to setting up camp, occupying a region, concentrating troops, deploying them, or with regard to any of the other formations an army adopts in battle or on the march, it makes all the difference whether someone is a geometer or not. But for things like that, even a little geometry—or calculation for that matter—would suffice. (526d1–8)

ὅσον μὲν, ἔφη, πρὸς τὰ πολεμικὰ αὐτοῦ τείνει, δῆλον ὅτι προσήκει πρὸς γὰρ τὰς στρατοπεδεύσεις καὶ καταλήψεις χωρίων καὶ συναγωγὰς καὶ ἐκτάσεις στρατιᾶς, καὶ ὅσα δὴ ἄλλα σχηματίζουνσι τὰ στρατόπεδα ἐν αὐταῖς τε ταῖς μάχαις καὶ πορείαις, διαφέρει ἂν αὐτὸς αὐτοῦ γεωμετρικὸς καὶ μὴ ὢν. Ἀλλ' οὖν δὴ, εἶπον, πρὸς μὲν τὰ τοιαῦτα καὶ βραχὺ τι ἂν ἔξαρκοί γεωμετρίας τε καὶ λογισμοῦ μόριον.

¹³ Further, geometry must have also suggested to Plato that, not only do transcendent properties govern physical ones, but transcendent *structures*, too, can govern physical structures. As we will see in chapter 7, this will play a significant role in Plato's final, hitherto unrecognized solution to the problem of reifying structure in his ontology.

Additionally, he continues, 'What we need to consider is whether the greater and more advanced part of it [geometry] tends to make it easier to see the form of the good' (τὸ δὲ πολὺ αὐτῆς καὶ πορρωτέρω προῖόν σκοπεῖσθαι δεῖ εἴ τι πρὸς ἐκεῖνο τείνει, πρὸς τὸ ποιεῖν κατιδεῖν ῥᾶον τὴν τοῦ ἀγαθοῦ ἰδέαν. 526d9–e1). Here Plato states explicitly that it is the very same science of geometry, which supports understanding in the practical domain of military tactics, that also supports understanding in the thoroughly theoretical and purely intelligible realm of the good.

The reader might object that the normativity of geometry is *sui generis*; whatever type of governance holds between, e.g., the perfect triangle and the wooden triangles carved by the carpenter, cannot serve as a model for the type of governance that the Form of (e.g.) Heat has over the sensible objects that are hot. My response is that the ontology Plato pioneers in the *Timaeus*, to which we will come in chapter 7, has the resources to address this point directly. Briefly put, Plato's novel stance in the *Timaeus* is to posit that the natural world is literally built out of geometrical figures: the triangles, which make up the four elements from which everything else is constituted. After making this move, Plato does not need to appeal to a mere parallelism between the normativity of geometry and that of Forms; now, he can confidently claim that the Forms govern the natural world with geometrical normativity, because the natural world is geometrically constituted.¹⁴

3.5. Closing remarks

Following Anaxagoras and more generally the Ionian tradition, Plato posits that the building blocks of reality are causal powers, as per his *Eleatic Principle*, that says that being powerful is the criterion for being. In contrast to Anaxagoras, Plato 'elevates' the opposites (such as the hot and the wet) and all other properties, from their physical status in Anaxagoras's ontology, to the transcendent domain of the intelligible. Yet Plato treats these transcendent properties—the Forms—as the

¹⁴ We will return to these issues in section 7.6 of chapter 7.

sources from which things in the world derive their qualifications, e.g., being hot or wet, etc., just like Anaxagoras, with his Opposites—as per the *Contagion Principle* of causation we saw in section 1.4. of chapter 1. The outcome is a surprising one: in Plato's universe, sensible objects are, e.g., hot by having within their constitution parts of the Form of Heat, which is transcendent.¹⁵ I argue that by reifying transcendent properties which impact causally on the physical world, Plato gives rise to a new type of problem in the history of metaphysics: the problem of the *instantiation* of properties. The problem will not remain the same, but will change, with Aristotle, whose forms are not transcendent but abstract entities. Anaxagoras, on the other hand, did not face such a problem, since his properties were physical, and their 'instantiation' (i.e., their coming to qualify objects) is by the predominant physical presence of their parts in physical objects. Within Plato's system, the issue is: How can features of objects in the physical world be constitutionally derived from features of transcendent entities, the Forms? We can distinguish two different questions here. How can parts of a transcendent Form constitute a physical object? And, how can parts of a transcendent Form qualify a physical object with its physical properties? Plato does not address the first question at all (although it may be that he does not distinguish it from the second). He does not address the second question either, because, I conjecture, he assumes the transcendent normativity of the Forms over physical objects, on the model of how mathematics and geometry govern nature. Plato will return to those issues in the development of his cosmology in the *Timaeus*, which I discuss in section 7.6 of chapter 7.

¹⁵ The issue of the Form's partition will be discussed at length in the following chapters. While in the *Phaedo*, Plato has not yet distinguished between having a *part* of a Form, and partaking in the *whole* of a Form, he will do it explicitly in the *Parmenides*, as we will see in section 4.4. of chapter 4.

4

Forms in objects

4.1. Introduction

As we saw in chapters 1 and 2, in Anaxagoras's system something is qualified as, e.g., hot when it has within its constitution parts or shares of the relevant Opposite, e.g., the Hot, in preponderance over parts of other Opposites. Thus the Opposites (*qua* sets of their parts)¹ overlap constitutionally with the objects they qualify, by sharing parts with them. This is the 'mechanism' by which objects are qualified by properties in Anaxagoras's system. I argue that Plato inherits this account from Anaxagoras, and makes it central to his metaphysics.² In this chapter we will examine how Plato is initially both attracted by the explanatory power of Anaxagoras's model of constitutional overlap, and concerned about some formidable difficulties that emerge if the model is combined with his theory of Forms. In the chapters to follow, I will show that Plato nevertheless keeps working with the model, and develops his views, across different dialogues, from the position that overlap is possessing common parts, to the position that overlap is independent of partitioning, i.e., independent from the Forms' having parts. I here anticipate in outline my interpretation of Plato's evolving conception of overlap, before articulating it in detail in this and in the chapters to follow. He holds at different stages of his metaphysical development, that

¹ On Anaxagoras's open sets, see also footnotes 51 and 82.

² Plato's references to Anaxagoras are direct, even when Anaxagoras is not mentioned by name. We need to remember that philosophical discussions in antiquity would not have been conducted as they are now and that very often—nearly ubiquitously—in ancient texts, arguments, and positions that are critiqued are not quoted as *we* would do from their sources.

- a) Sensible objects partake in the Forms by *constitutional overlap* with them, where the Forms' parts are individuated by means of what I call *Cambridge partitioning*;
- b) Sensible objects *overlap qualitatively* with the Forms, which secures that the objects *resemble* the Forms; the metaphysical 'mechanism' of overlap by parts has now been abandoned in favour of that of imitation.³

Even when in the *Timaeus*, as we will see in chapter 7, Plato reaches a new conception of the Forms (now all making up a single *paradeigma*), and of participation (by imitation), still, there is overlap between the sensible objects and the *paradeigma*, in that they share a qualitative state (the aspect of the *paradeigma* that the *Demiurge* copied in creating the object). Thus, overlap covers a range of metaphysically related models in Plato's system as a whole; sharing a part is only one way to overlap, the other way is qualitative overlap. We begin by exploring here Plato's take on constitutional overlap.

4.2. Being present in *versus* belonging to an object

At an early stage in the development of his metaphysics Plato appears to have what we might call misgivings concerning Anaxagoras's model of constitutional overlap for explaining property qualification. In a passage in the *Lysis* Plato expresses the thought that property possession requires, in the object, something more than, or different from, the mere presence of (parts of) the property in the object. He introduces the following thought experiment:

'Look at it this way' I said. 'If someone smeared your blond hair with white lead, would your hair then *be* white or *appear* white?' 'Appear

³ As we will see in chapter 7, in the *Timaeus* there are in fact two versions of qualitative overlap in play; according to the second, sensible objects *overlap qualitatively* with *images* of Forms, where the images are qualitative *copies*, not parts, of the Forms that qualify objects.

white,' he said. 'And yet whiteness would surely be *present* with it.' 'Yes.' 'But all the same your hair would not yet be white. Though whiteness would be *present*, your hair *would not be* white any more than it is black.' 'True' (217d1–6; emphasis in the original translation)

Ἀλλ' ὦδε, ἦν δ' ἐγώ. εἴ τις σου ξανθὰς οὔσας τὰς τρίχας ψιμυθίῳ ἀλείψειεν, πότερον τότε λευκαὶ εἶεν ἢ φαίνονται ἄν; Φαίνονται ἄν, ἦ δ' ὅς. Καὶ μὴν παρείη γ' ἂν αὐταῖς λευκότης. Ναί. Ἀλλ' ὅμως οὐδέν τι μᾶλλον ἂν εἶεν λευκαὶ πω, ἀλλὰ παρούσης λευκότητος οὔτε τι λευκαὶ οὔτε μέλαιναί εἰσιν. Ἀληθῆ.

Plato's stance here appears to be a direct rejection of Anaxagoras's model. Plato even builds his example so as to secure that the white colour would be preponderant in the hair—which satisfies Anaxagoras's *Preponderance Principle* (see section 2.2 of chapter 2). Plato continues:

'But when, my friend, old age introduces this same color [white] to your hair, then it will *become* of the same sort as what is *present*, white by the presence of white.' 'Naturally.' 'Here at last is my question, then. When a thing has something *present* with it, will it be of the *same sort* [white] as what is present? Or only when that thing is *present in a certain way* [by *belonging as a property* to the subject]?' 'Only then,' he said. (217d6–e4; my emphasis)

Ἀλλ' ὅταν δὴ, ὦ φίλε, τὸ γῆρας αὐταῖς ταῦτὸν τοῦτο χρῶμα ἐπαγάγῃ, τότε ἐγένοντο οἷόνπερ τὸ παρόν, λευκοῦ παρουσίᾳ λευκαὶ. Πῶς γὰρ οὐ; Τοῦτο τοίνυν ἐρωτῶ νῦν δὴ, εἰ ᾗ ἂν τι παρῇ, τοιοῦτον ἔσται τὸ ἔχον οἷον τὸ παρόν· ἢ ἐὰν μὲν κατὰ τινα τρόπον παρῇ, ἔσται, ἐὰν δὲ μή, οὐ; Οὕτω μᾶλλον, ἔφη.

Does Plato offer an argument, here, against the thought that mere presence of (parts of) properties in objects qualifies the objects with those properties? He does not; but his metaphysical intuition is clearly stated: belonging as a property to an object is different from merely being present in that object. Whilst this appears to be a direct criticism of Anaxagoras's position, Plato does not have any metaphysical

alternative to offer, at this point, to the Anaxagorean model according to which the presence of (parts of) a quality in an object qualifies the object; he cannot distinguish, metaphysically, what his intuition suggests, namely that being present in an object is different from belonging to it as subject.

4.3. Presence or communion?

The *Phaedo* provides us with a uniquely helpful starting point for examining Plato's views on participation in Forms by constitutional overlap, as per Anaxagoras's model.⁴ There Plato writes,

I am going to try to show you the kind of cause with which I have concerned myself. [. . .] I assume the existence of a Beautiful, itself by itself [. . .]. I think that, if there is anything beautiful besides the Beautiful itself, it is beautiful because of nothing other than that it partakes in that Beautiful; and I say so with respect to every property. [. . .] But I simply, naïvely and perhaps foolishly cling to this, that nothing else makes that thing beautiful other than the presence of, or the communion with the Beautiful, or in whatever manner or way [this is achieved]; for I do not have a firm view [on how this comes about]; but I hold that all beautiful things become beautiful by the Beautiful. (100b–d, abridged and in a slightly modified translation)

ἔρχομαι [γάρ] δὴ ἐπιχειρῶν σοι ἐπιδείξασθαι τῆς αἰτίας τὸ εἶδος ὃ πεπραγμάτευμαι [. . .] ὑποθέμενος εἶναι τι καλὸν αὐτὸ καθ' αὐτὸ [. . .] φαίνεται γάρ μοι, εἴ τί ἐστιν ἄλλο καλὸν πλὴν αὐτὸ τὸ καλόν, οὐδὲ δι' ἑν ἄλλο καλὸν εἶναι ἢ διότι μετέχει ἐκείνου τοῦ καλοῦ· καὶ πάντα δὴ οὕτως λέγω [. . .] τοῦτο δὲ ἀπλῶς καὶ ἀτέχνως καὶ ἴσως εὐήθως ἔχω παρ' ἑμαυτῷ, ὅτι οὐκ ἄλλο τι ποιεῖ αὐτὸ καλὸν ἢ ἡ ἐκείνου τοῦ καλοῦ εἴτε παρουσία εἴτε κοινωνία εἴτε ὅπη δὴ καὶ ὅπως †προσγενομένη· οὐ γὰρ ἔτι τοῦτο δισχυρίζομαι, ἀλλ' ὅτι τῷ καλῷ πάντα τὰ καλὰ [γίνεται] καλὰ.

⁴ I take the *Phaedo* to be a conceptual rather than chronological starting point for investigating Plato's engagement with Anaxagoras's constitutional overlap model.

In this passage we find textual evidence that Plato distinguishes between an object's being qualified by a Form, and the metaphysical 'mechanism' by which it is qualified. I take this distinction to be Plato's metaphysical refinement of Anaxagoras's position. In the passage, Plato is explicitly noncommittal regarding the 'mechanism' by which an object is beautiful: it may be by the *presence* (παρουσία) of the Form of Beauty in the object, or by the object's *communion* (κοινωνία) with the Form of Beauty. Presumably he conceives presence and communion as two alternative general models for property possession. The two models may be illustrated with everyday examples. Let us consider the property of being hot and two ways in which an ordinary physical object might acquire it. One way is that in which a clay stove becomes hot, when a piece of burning coal is taken from a fire and placed in the stove; this illustrates the 'mechanism' of partaking in Forms by the presence of the Form (or a part of the Form) in the partaking object.⁵ The second way is that in which an open fire makes a person near it warm; on my reading, this corresponds to the 'mechanism' of partaking in a Form by the communion of the Form with the partaking object. In this passage, Plato remains uncommitted as to whether participation in a Form is through having *parts* of the Form in the partaker (παρουσία), or through a type of *communion* (κοινωνία) between the Form and the object. But the very fact that he differentiates the two possibilities is noteworthy. It reveals Plato's (non-committal) hesitation concerning Anaxagoras's model of possessing a property by partaking *in parts of it*, i.e., by *constitutional* overlap with it. It also reveals Plato's (non-committal) alternative 'mechanism' for partaking, which he will ultimately favour in his theory, i.e., *qualitative* overlap. (In later chapters I will tease out, metaphysically, the two models that are at this stage an unconceptualized alternative for Plato.)

Plato's wanting at this stage to remain non-committal finds expression in the so-called *Final Argument* in the *Phaedo*, if we follow the way David Gallop reads it in his (1975) commentary. Gallop derives the steps of Plato's final argument for the immortality of the soul in

⁵ As mentioned also in footnote 99, in the *Phaedo* Plato has not yet distinguished between having a *part* of a Form, and partaking in the *whole* of a Form, which he will do explicitly in the *Parmenides*, as we will see in section 4.4. of chapter 4.

two very carefully worded parallel versions: one which delivers the argument in terms of immanent Forms (i.e., parts of Forms *present in* the partaking objects, by *παρουσία*); and one which is not committed to immanent Forms, and thus follows presumably a different model for participation—that of *communion* (*κοινωνία*), I submit. In his reconstruction of the argument, Gallop follows Plato's text very closely, and shows thereby that the text is very carefully crafted, so as to allow that the argument may be understood in two ways: as involving immanent Forms, but also without presupposing a commitment to immanent Forms (1975: 203–5). Gallop's point is that the ambiguity of the text reflects Plato's own 'ambivalence' about the existence of immanent Forms in sensible things. I share this thought, and submit that Plato's ambivalence—as to whether *f*-things are *f*-qualified by having parts of Form F in them, or by communion with Form F—is a reflection of the attraction to partaking in parts, but also of the difficulties that partaking in parts of the Forms generates (as we will see); this is what Plato leaves open at this stage, the choice of presence over communion or *vice versa*.

Thus, I conclude that Plato is clear that, through partaking, the Forms fulfil the metaphysical function of grounding the qualification and qualitative resemblance of sensible things; but he is not yet clear or committed as to which 'mechanism' the Forms may fulfil this function by. The significance of these considerations for my overarching argument is that they show us that Plato does not endorse uncritically—but rather, very thoughtfully—the model for property possession that he inherits from Anaxagoras.

4.4. The non-recurrence of Forms

Plato pursues further in the *Parmenides* his investigation of Anaxagoras's model of qualification of an object by presence of (parts of) the property in the object. There, he scrutinizes the model by means of what I call the *Partaking Dilemma*. Let us begin our examination of the *Dilemma* by asking ourselves the question: Why does Plato introduce this *Dilemma*? We discussed in the preceding section how, in the *Phaedo*, he appears non-committal about the 'mechanism'

of partaking in Forms; one of the two options he considers there is that an object partakes of a Form by the presence of the Form in it. The *Partaking Dilemma* makes it clear that there are at least two ways in which the Form can be present in the object: by the object having the whole of a Form, or having a part of a Form in it. We read,

‘So does each thing that gets a share get as its share the Form as a whole or a part of it? Or could there be some other means of getting a share apart from these two?’ ‘How could there be?’ He said. (131a4–7)

οὐκοῦν ἦτοι ὅλου τοῦ εἶδους ἢ μέρους ἕκαστον τὸ μεταλαμβάνον μεταλαμβάνει; ἢ ἄλλη τις ἂν μετάληψις χωρὶς τούτων γένοιτο; καὶ πῶς ἂν; εἶπεν.

The argument allows for only two ways of participating in a Form. Either will turn out to be problematic; and yet *tertium non datur*. If the Form F is present as a whole in every *f*-thing, the Form F is different from itself. If on the other hand it is only a part of the Form F that is present in every *f*-thing, the problem is that no part of a Form can be an appropriate ‘proxy’ for the Form. I will concentrate here on the latter horn of the *Dilemma*, as the most relevant to the overarching argument of this book. Plato writes,

‘For suppose you are going to divide largeness itself. If each of the many large things is to be large by a part of largeness smaller than largeness itself, won’t that appear unreasonable?’ ‘It certainly will,’ he replied. ‘What about this? Will each thing that has received a small part of the equal have something by which to be equal to anything, when its portion is less than the equal itself?’ ‘That’s impossible.’ (131c5–e5)

ὅρα γάρ, φάναι· εἰ αὐτὸ τὸ μέγεθος μεριεῖς καὶ ἕκαστον τῶν πολλῶν μεγάλων μεγέθους μέρει σμικροτέρῳ αὐτοῦ τοῦ μεγέθους μέγα ἔσται, ἄρα οὐκ ἄλογον φανεῖται; πάνυ γ’, ἔφη. τί δέ; τοῦ ἴσου μέρος ἕκαστον σμικρὸν ἀπολαβόν τι ἔξει ὃ ἐλάττονι ὄντι αὐτοῦ τοῦ ἴσου τὸ ἔχον ἴσον τῷ ἔσται; ἀδύνατον.

The context makes it clear that Plato is thinking of the parts of Forms *functionally*, here; the question he is raising is: Can the parts of a Form do the metaphysical work that the Form as a whole would do? He finds it 'unreasonable' (ἄλογον), as we see in the text just quoted, where the absurdity is illustrated with the example of a part of Largeness, which is 'smaller than' (σμικροτέρῳ) Largeness itself, and yet per hypothesis it would make the object it is in large. Why can a large object *not* be large in virtue of a part of the Form of Largeness, notwithstanding the fact that the part, *qua* part, is 'smaller than' (σμικρότερον) the whole Form of Largeness? The reason here is not that a part of the Form of Largeness is small, and thus, being small it could not make something else large, i.e., make something else its own opposite (which would also be objectionable to Plato, *Phaedo* 97a5–b1, and further contradict the *Contagion Principle*, see section 1.4. of chapter 1; see also *Phaedo* 104c7–8). For the argument here is supposed to generalize to all Forms, e.g., to the Form of Equality too. How can something that has only a part of the Form of Equality make anything equal to anything else? More generally, how are we to understand the key notion in this argument, of being 'smaller than', as applicable to all Forms?

Liddle and Scott distinguish three senses of σμικρός, the third of which is 'small in importance' or significance, which is cognate to being less impactful,⁶ and thus less effective or less powerful. So, on this reading, Plato's thought here is that a part of a Form cannot be functionally equivalent to the whole Form. However, it remains an open question whether the reason why for Plato a part of the Form cannot be functionally equivalent to the whole Form is that a part is *functionally or quantitatively* 'less' than its Form.⁷ If the justification for claiming that a part of a Form is functionally less than the whole Form, was (per hypothesis) that a part can never perform the function of a whole—for any function, any part, and any whole—the conclusion

⁶ Plato uses the term with this meaning, e.g., in *Republic*: '[. . .] we should try to discover and point out [. . .] what's the smallest [σμικροτάτου] change that would enable our city to reach our sort of constitution—one change if possible, or not one, two, and if not two, then the fewest in number and the least extensive [σμικροτάτων τῇν δύνανται]' (473b3–c1)

⁷ This point has been discussed in the literature, see, e.g., among others, Scaltsas (1989).

would not follow. Counter-examples are easy to find. If, on the other hand, Plato is per hypothesis reasoning here specifically about the size of the part, then, why would a part of e.g., the Form of Heat, which is smaller than the whole Form of Heat, not be able to make an object (at least to some degree) hot? What does the size of the part of a Form (e.g., that of Equality) have to do with the part's role in the object that possesses it?

So, why should a part be functionally inadequate for the meta-physical role that Plato has assumed it can play by being present in an object? Plato does not explain why, at least in the first horn of the *Dilemma*. But we can derive the reason from the second horn of the *Dilemma*. We saw that the first horn considers the case in which an object is qualified by the Form by having a part of a Form, the second by having the whole Form. Plato immediately dismisses the latter option, thus,

Do you think, then, that the Form as a whole—one thing—is in each of the many? [. . .] So, being one and the same, it will be at the same time, as a whole, in things that are many and separate; and, thus it would itself be separate from itself. (131a8–b2)

Πότερον οὖν δοκεῖ σοι ὅλον τὸ εἶδος ἐν ἑκαστῷ εἶναι τῶν πολλῶν ἐν ὄν, ἢ πῶς; [. . .] Ἐν ἄρα ὄν καὶ ταὐτὸν ἐν πολλοῖς καὶ χωρὶς οὖσιν ὅλον ἅμα ἐνέσται, καὶ οὕτως αὐτὸ αὐτοῦ χωρὶς ἂν εἴη.

I reconstruct Plato's reasoning in this brief but important passage as follows. The Form *F* is what stands for the property of being *f*, and that whose presence in an object qualifies the object as *f*. Thus, if there are two hot things in the world, each of them must have the Form of Heat in them to be qualified by it. But, per hypothesis, only the whole Form can qualify an object with the property of being hot. Further, there is only one Form per type of property (which is here assumed, but demonstrated in the *Third Bed Argument* (see section 4.5). That is to say, the Forms are primitively unique (as Anaxagoras's Opposites are), and cannot recur. From the assumptions that things require the presence of the whole Form in order to be qualified by it, and that the Forms are each unique, absurdities follow, namely that a Form would become

different from itself, as mentioned in the second horn of the *Dilemma*, or that it would become an instance of itself, rather than be itself, as the *Third Bed Argument* shows. I submit that these are the reason why Plato assumes, in the first horn of the *Dilemma*, that the parts of a Form, being 'smaller' than the Form itself, are functionally inadequate for qualifying objects with the property the Form stands for. For if the parts were functionally adequate for 'transmitting' the Form to the objects, they would each be functioning as the Form itself, which would *per impossibile* either make the Form different from itself, or make it be an instance of itself.

4.5. The Forms' uniqueness

Let us now return to the hypothesis formulated in the first horn of the *Partaking Dilemma*, namely that parts of a Form *F* can qualify an object as *f*. This hypothesis assumes that the parts of the Form are able to fulfil the same metaphysical function as the whole Form, namely the function of making *f*-qualified the object they are in. In brief, the hypothesis assumes that the parts of a Form are *functionally equivalent* to the whole Form. This however generates a problem within Plato's metaphysical system. The hypothesis allows, in effect, for multiple Forms per property, as many as are the parts of the Forms—thus contradicting directly the *One Over Many Principle* (on account that on this hypothesis there would be *many* sources of *f*-ness over the many *f*-things in the world),⁸ but also the conclusion Plato derives in his *Third Bed Argument* in the *Republic* (henceforth TBA for brevity). The TBA's conclusion is that necessarily each Form is unique, even if it qualifies all the instances of that type.⁹ The argument runs as follows:

[. . .] if he [god] made only two [Forms of Bed, each of which is what 'bed' really is], then again one would come to light whose form they

⁸ See section 1.4 of chapter 1.

⁹ Plato's *Third Bed Argument* offers an early response, in the history of metaphysics, to the principle of the *Identity of the Indiscernibles*. In short, assuming numerically distinct but qualitatively identical entities reveals that there is in fact more to their respective make up than their qualitative identity.

in turn would both possess, and *that* [Form] would be the one which is what 'bed' really is and not the other two. (597c6–8, my emphasis)

[. . .] εἰ δύο μόνας ποιήσειεν, πάλιν ἂν μία ἀναφανείη ἥς ἐκεῖναι ἂν αὐτὸ ἀμφοτέραι τὸ εἶδος ἔχοιεν, καὶ εἴη ἂν ὁ ἔστιν κλίνη ἐκείνη, ἀλλ' οὐχ αἱ δύο.

In brief, the thrust of the argument is that there is only one Form F in virtue of which *f*-similar things, e.g., beds, are similar, *qua* likenesses of the Form. If there were two Forms standing for the same type of property, F_1 and F_2 , they would be, per hypothesis, qualitatively identical to one another, but also numerically different from each other, since they would be two. But if F_1 and F_2 were qualitatively identical but numerically different between them, they would share a single Form F_3 between them, and would both be instances of F_3 by partaking in it. The reason for this is that qualitative sameness is accounted for by the *oneness* of the source of the qualitative condition (as per the *One Over Many Principle*). So, Plato's argument continues, F_3 will be *the* Form of *F*-ness, whilst the originally hypothesized two Forms, F_1 and F_2 , will be only similar to it, but numerically different from it. The idea is that whatever it is that makes F_1 and F_2 numerically different from F_3 is (constitutionally) additional to 'what it is to be *f*-ness' (in Plato's example: ὁ ἔστιν κλίνη ἐκείνη), which F_3 is. Hence, the additional element that makes F_1 and F_2 numerically different between them and different from F_3 , 'compromises' the natures of the two original Forms F_1 and F_2 , which is why they each fail to be *the* Form of *f*-ness. The argument's conclusion, that there is a unique Form per property type, blocks the hypothesis of the first horn of the *Partaking Dilemma*, which assumes that the parts of a Form F can do the same metaphysical work which the Form as a whole does, namely qualifying an object as *f*. There can be only one Form F , uniquely, which can qualify objects as *f*.¹⁰ We will see in what follows that this will turn out to be the reason why Plato abandons partaking in *parts* of a Form (i.e., constitutional

¹⁰ For a detailed analysis of the *Third Bed Argument* and the relevant scholarly literature, see Marmodoro (2008). I also return to it in section 4.7 of this chapter.

overlap), as a metaphysical 'mechanism' for the qualification of objects with the property of a Form.

4.6. The Paradox of Smallness

Within the *Partaking Dilemma* in the *Parmenides*, Plato raises a paradox concerning how the addition of a part of smallness¹¹ to an object could result in the object's becoming smaller, which appears directly aimed at criticizing Anaxagoras's views. In Plato's words:

'Well, suppose one of us is going to have a part of the small. The small will be larger than that part of it, since the part is a part of it: so the small itself will be larger! And that to which the part subtracted is added will be smaller, not larger, than it was before.'—'That surely couldn't happen,' he said. (131d7–e3)

Ἀλλὰ τοῦ μικροῦ μέρος τις ἡμῶν ἔξει, τούτου δὲ αὐτοῦ τὸ μικρὸν μείζον ἔσται ἅτε μέρους ἑαυτοῦ ὄντος, καὶ οὕτω δὴ αὐτὸ τὸ μικρὸν μείζον ἔσται· ὃ δ' ἂν προστεθῇ τὸ ἀφαιρεθὲν, τοῦτο μικρότερον ἔσται ἀλλ' οὐ μείζον ἢ πρὶν.

Οὐκ ἂν γένοιτο, φάναι, τοῦτό γε. Τίνα οὖν τρόπον, εἰπεῖν.

Anaxagoras does not express himself explicitly on this matter; we can only derive his position from the extant textual evidence. In B1 he claims: 'nothing was evident [in the primordial mixture] on account of smallness' (οὐδὲν ἔνδηλον ἦν ὑπὸ μικρότητος). This suggests that nothing was perceptible because there were small shares of everything everywhere, in a state of extreme mixture, without any particular concentration of them anywhere. Namely, the positive claim would be that it is the smallness/largeness in the size of the bulk of an Opposite at a location that determines its perceptibility. It does indeed seem intuitive that when the Opposite Large, for instance, becomes preponderant in an object, that object becomes larger by being quantitatively

¹¹ I use 'smallness' deliberately here, as a neutral term, because the argument bears both on the case of the Opposite Small and the Form of Smallness.

augmented through the acquisition of more and more shares of the Large. This account however does not generalize to the case, e.g., of the Small: How could something acquire more shares of the Opposite Small, and yet become thereby, not bigger, but smaller? This is an interesting conundrum, because the option that something becomes smaller by losing shares of the Small is not open to Anaxagoras, since, first, it is the preponderance (not depletion) of an Opposite that leads to the object's respective qualification; and second, Anaxagoras needs an account of the qualification of objects that works for all Opposites, not just for the Small; clearly, something cannot become larger by losing shares of the Large. It would thus appear that the most charitable interpretation of preponderance would be that preponderance increases the intensity of the Opposite in a thing. However, even this generates a difficulty for the Opposite Small in particular, and more generally for all Opposites which we do not conceive of as having intensity/differing in intensity (e.g., being Odd). I will not pursue further here the issue of how Anaxagoras might be able (or not) to address this difficulty. I will note however that it appears that being small is a property that creates difficulties *both* for Anaxagoras and for Plato.

There does seem to be something that neither of the two philosophers has worked out with clarity about the distribution of this property across individual objects in terms of presence (of parts) of the Small/Smallness. In the *Partaking Dilemma* in the *Parmenides*, Plato finds problematic that the Form of Smallness would have parts smaller than itself, whose presence in what is small makes what is small larger (than its parts), and so large (i.e., qualified by two opposites at once, which is not an option in Plato's metaphysics; see *Phaedo* 104c7–8). In his own words,

[. . .] suppose one of us is going to have a part of the small. The small will be larger than that part of it, since the part is a part of it: so the small itself will be larger! (131d7–9)

[. . .] τοῦ μικροῦ μέρος τις ἡμῶν ἔξει, τούτου δὲ αὐτοῦ τὸ μικρὸν μείζον ἔσται ἅτε μέρους ἑαυτοῦ ὄντος, καὶ οὕτω δὴ αὐτὸ τὸ μικρὸν μείζον ἔσται.

How does the problem arise here? There is an implicit ambiguity in how Plato uses 'part' in the argument. On the one hand, per hypothesis, possessing a part of Smallness qualifies the possessor as small; on the other hand, possessing a part of Smallness entails that the *Form of Smallness is large* by comparison. Why is that? It is because in the first occurrence, the part of Smallness operates *functionally*, by bringing the property of smallness to the thing it is in. In the second occurrence, the part of Smallness does not operate functionally, but *extensionally* or *quantitatively*, as a part of a greater whole—where the whole is the Form of Smallness.

The reason why this paradox is significant for our present inquiry is that it brings into relief a crucial feature of Plato's conception of constitutional overlap, which is central in understanding the impact of Anaxagoras's system on Plato's. Anaxagoras conceives the 'mechanism' the constitutional overlap between a small object and the Opposite Small *quantitatively*: shares of the Opposite Small come to be physically, through the operation of the vortex, preponderant in the object that thereby becomes small. At this stage of his metaphysical development, Plato follows Anaxagoras in viewing constitutional overlap by parts as the way in which things partake of Forms, but he vacillates between different ways in which the parts of the Forms may operate: *functionally* versus *quantitatively*. Two sets of questions open up for us to explore. First, it is indicative that Plato insists here that the parts of Forms in objects *possess* the property of the Forms (e.g., the parts of the Form of Heat are hot, and they will never accept their opposite property, e.g. cold, as per *Phaedo* 104c7–8 mentioned earlier). One can understand why, on Anaxagoras's way of thinking of parts of the Opposites as operating *quantitatively*, the parts of, e.g., the Opposite Hot are posited to be hot; but on Plato's way of thinking, do parts operate *quantitatively*, as in Anaxagoras's system, or *functionally*? Does Plato understand clearly the difference between *functional* and *quantitative* parts of the Forms? We will address this issue in section 4.8.

4.7. Is self-predication self-predication?

When did philosophers first think that an entity is an instance of itself, and what did they mean by it? I have already made use of

the concept of an 'instance of a property' a few times so far. By an 'instance of a property' I mean an entity (of any ontological kind) that is qualified by the property, and which can be distinguished from other entities qualified by that property. Are Anaxagoras's Opposites instances of themselves? He does hold that an Opposite property is qualified by that property, e.g., the Opposite Hot is hot, or the Opposite Small is small. He also thinks that the parts of an Opposite are qualified by the property of that Opposite, e.g., the parts of the Hot are hot, and the parts of the Small are small.¹² But can Anaxagoras account for these stances, within his metaphysics? We saw that for him things in nature are qualified as hot or small by the preponderance in them of parts of the respective Opposites, e.g. the Hot or the Small, as per the *Preponderance Principle*. This conception of qualification is, however, problematic, because it cannot show the parts of an Opposite to be qualified by its property, and hence, the Opposite to be a *homoeomer*. A part of, e.g., the Hot cannot be hot by the preponderance of parts of the Hot in it. A part of the Hot, independently of how small it is, has parts of every Opposite in it, as per the *Everything in Everything Principle*. Hence, having more parts of the Hot entails more parts of every Opposite; parts of the Hot cannot be preponderant in relation to parts of any other Opposite, because they bring parts of every other Opposite 'with them', everywhere they are. If any part of the Hot is hot, it must be qualified as hot in a different sense of 'being hot' than by the preponderance of parts of the Hot in it. Such a different sense of qualification is not defined by Anaxagoras, at least in the extant texts. Since we have no explanation of the second type of qualification, namely, of the way in which parts of, e.g., the Hot are hot, we are not in the position to conclude whether we can recognize self-predication in Anaxagoras's system. Clearly, the *Preponderance Principle* will not suffice for showing any cases of self-predication, if it cannot show the parts of an Opposite *F* to be *f*. So we need to remain agnostic as to whether there is self-predication in Anaxagoras's system.

¹² For evidence, see B3 for small parts of the Small; the principle of predominance, in B12; and Aristotle's description of Anaxagoras's Opposites in the *Physics* as *homoeomers*, where the parts are of the same kind as the whole.

On the other hand, the *Self-Predication Principle* (SP) is one of the core premises of Plato's *Third Man Argument* (henceforth, the TMA, to which section 5.5 of chapter 5 and section 7.2 of chapter 7 are devoted); and so is the *Non-Identity Principle* (NI). Combining *Self-Predication* and *Non-Identity* gives rise to the infamous regress. Informally stated, the principles are:

SP: A Form *F* is qualified by the property it stands for: Form *F* is *f*.

NI: An *f*-Form acquires its *f*-ness from a numerically different but qualitatively identical *f*-Form.

Gregory Vlastos (1954) was the first to identify the two principles and the role they play in the TMA, thus providing a conceptual frame for all subsequent discussions of the argument. Vlastos however did not see why Plato is committed to the NI premise: he (1954: 329), Plato's scholars in general, and even undergraduate students (speaking from first-hand teaching experience!) often observe that the TMA regress would be avoided without the NI of Forms—if Form *F* were *f on account of itself*, rather than by participating in a further Form.

Given SP, it is surprising that anything more would be needed, over and above self-predication, to make Form *F* *f*. Why did Plato not see this point, when our students do, and amend Plato's theory in their essays by abandoning NI? This is a very challenging problem, because it is not a question that Plato raises, let alone answers for us. Working out the answer to this question will help us understand features of Plato's theory of Forms that we, *qua* interpreters, have thus far accepted as primitives in the theory. I want to begin arguing for my answer by raising a different question: Why did Aristotle *not* face the TMA regress? Aristotle's forms, too, are self-predicational, because their definitions are true of them (e.g., the definition of the form 'man' is true of that form). So, if Aristotle's forms do not face the TMA regress, despite being self-predicational, it must be that his theory is not committed to NI. How does Aristotle avoid this commitment? I submit that the fundamental difference between Plato and Aristotle in relation to NI is the way Plato and Aristotle, respectively, conceive of properties: Plato conceives of the Forms as *non-recurrent individuals*, while Aristotle

conceives of his forms as *abstract universals*. So, what is the difference between the two views, and how can this difference block the TMA regress?

To answer this question, we need to go back to Plato's *Third Bed Argument* (TBA, see section 4.5). We saw the TBA's reasoning earlier: if god were to make two Forms of Bed, F_1 and F_2 , then a third Form of Bed would come into existence, F_3 , which is possessed by both F_1 and F_2 . So, F_1 and F_2 turn out to be instances of the Form they share, F_3 , which is the only true Form of Bed. In Plato's words, again:

[...] if he [god] made only two [Forms of Bed, F_1 and F_2], then again one [Form of Bed, F_3] would come to light whose form [f_3] they in turn would both possess, and that [F_3] would be the one which is what 'bed' really is, and not the other two [F_1 and F_2]. (597c7–9; my emphasis)

[...] εἰ δύο μόνας ποιήσειεν, πάλιν ἄν μία ἀναφανείη ἣς ἐκεῖναι ἄν αὐτὸ ἀμφοτέραι τὸ εἶδος ἔχοιεν, καὶ εἴη ἄν ὃ ἐστὶν κλίνη ἐκείνη, ἀλλ' οὐχ αἱ δύο.

We can challenge Plato's claim in the passage quoted, that F_3 is *the* Form of Bed. We saw that Form F_3 comes to be as shared by the two original Forms, F_1 and F_2 . However, if we continue the reasoning here, which Plato does not do in the TBA, but does in the TMA, we can ask further: What do F_1 , F_2 , and F_3 share in common? As we know, the TMA answers this question with a regress of Forms. The regress would be avoided if F_3 did not come into existence. So, why does F_3 come into existence? If we think as Aristotle would, then we would hold that the common form possessed by each of F_1 and F_2 , namely, the form *of* F_3 , call it f_3 , is a Form individuated by *abstraction* (where by abstraction I mean the process that Aristotle performs on a substance in *Metaphysics* Z.3). I submit that it is the ontological difference between F_3 (the Form that comes into existence in Plato's TBA), and f_3 (which Plato tells us in the TBA is the form *of* F_3) that is responsible for the TMA regress, as I will show in what follows. We can understand the difference between F_3 and f_3 if we look into the metaphysical conclusions of the TBA.

What the TBA establishes is that *instantiation de-forms the Forms*, i.e., makes them lose their status as Forms.¹³ Instantiation de-forms the Forms by introducing whatever element accounts for their numerical distinctness, over and above their mutual similarity. F_1 and F_2 , which are instances of F_3 , are numerically different between them and numerically different from F_3 . Put simply, F_1 and F_2 are each, respectively, the form-of- F_3 -plus-numerical-distinctness. Plato's words bear this out in the phrasing of the TBA: he does not say that Forms F_1 and F_2 , which are qualitatively identical, possess, each, F_3 , the Form that 'comes to light' from their similarity. Rather, he surprisingly writes: 'then again one would come to light *whose form* they in turn would both possess' (πάλιν ἂν μία ἀναφανείη ἥς ἐκεῖναι ἂν αὐ ἁμφοτέροι τοι εἶδος ἔχοιεν, 597c7–9, my emphasis).¹⁴ There is a difference between the form that the two (qualitatively identical) Forms F_1 and F_2 possess (i.e., the form of F_3) and the Form F_3 . This difference, I argue in what follows, is the *Non-Identity* assumption that gets the TMA regress going.

It is difficult to overemphasize the significance of this conceptual slip of Plato, in identifying f_3 with F_3 , which reveals how he thinks of properties. The expression, '*whose form* they in turn would both possess' is Plato's way to refer to an (Aristotelian) universal, which enters, unacknowledged, his ontology. Perhaps here Plato is expressing the intuition that he needs universals in his ontology. This intuition is implicit also in his conception of the Forms as *monoeides* (which we will discuss in section 5.3 of chapter 5): Plato holds that each Form is essentially *monoeides*; i.e., of a single form throughout. By positing that a Form is *monoeides*, he conceptually 'divides' a Form from the form it essentially is.

So here is the metaphysical lesson we learn from the TBA. The common form that F_1 and F_2 share between them, f_3 (for which Plato

¹³ In Marmodoro (2008), I argued that the overall conclusion of the TBA is that 'cloning de-forms', i.e., multiplying a Form by positing many numerically distinct instances of it, de-forms the Form. This was the conclusion that I also brought to bear on our discussion about multiple parts of the Forms being functionally equivalent to the Form as a whole, in section 4.5 of this chapter. Here I am focusing on a narrower conclusion derived from the TBA, that is that 'instantiation de-forms', i.e., positing even just one instance of the Form, let alone two or many, de-forms the Forms by adding to its constitution something that accounts for its numerical distinctness.

¹⁴ I now read this line of Plato's differently than in Marmodoro (2008: 233, ft. 15).

uses the term εἶδος as we saw earlier), is Form F_3 , which, as Aristotle would have conceived of it, is a reified entity abstracted from F_1 and F_2 . However, Plato does not identify the property of f -ness with the form of F_3 , namely f_3 ; Plato identifies f -ness with F_3 ! But F_3 is an *instance* of the form shared by F_1 and F_2 . So F_3 has a numerical distinctness of its own, over and above the form f_3 that F_1 and F_2 each possesses. This means that F_3 shares the form f_3 in common with F_1 and F_2 , which makes all of them f , and which every subsequent Form F_n in the TMA regress shares, too. However, this common form f_3 is never reified as such in Plato's ontology; only its *instances* are individuated as Forms F_1 , F_2 , F_3 , ... (e.g., of Bed). (And the TBA regress shows that in fact none of them is 'what "bed" really is' (ὃ ἐστὶν κλίνη)). If the shared form f_3 is *instantiated*, as F_3 , it gets 'de-formed'; for the same reason that F_1 and F_2 are 'de-formed' as Forms of f -ness. That is to say, it is Plato's conceptual jump from the form f_3 to an instance of it, F_3 , that gets the TMA regress started. To block the regress, Plato would need to resist instantiating f_3 as Form F_3 , and instead, reify forms like f_3 as such, as abstract entities, just as Aristotle did. In conclusion, I submit that Aristotle does not face a TMA regress in his theory of forms/properties, because, although his forms are self-predicational (i.e., their definition is true of them), he is not committed to *Non-Identity*: for Aristotle, what makes an f -thing f is the very form f that this thing possesses (which he individuates by abstracting it from the f -thing); in the terminology used so far, for Aristotle, what makes an f -thing f is f_3 , not F_3 (whilst for Plato, it is F_3).

So, what is self-predication in Plato? I claim that it is fundamentally different from self-predication in Aristotle. For Aristotle, on the one hand, the definition of an Aristotelian form is true of it; on the other, the form does not have this definition as a property of it, but it is its essence, *what the form is*. By contrast, for Plato, *Self-Predication* of Form F attributes f -ness to Form F as a *property*, which does not exhaust the make-up or constitution of Form F . The ontological difference¹⁵ between the f -ness possessed by Form F_3 , i.e., f_3 , and Form F_3 is the 'de-formity' that Plato warned us about with the TBA, which *instantiation* brings with it, to allow for the

¹⁵ This difference accounts for the numerical distinctness of Form F , e.g., *qua* F_3 .

numerical distinctness of each Form (e.g., F_1 , F_2 , F_3 , etc.). Following his reasoning we now see that strictly speaking, it is not F_3 that is predicated of F_3 itself, but it is only the form of F_3 , i.e., f_3 , that is predicated of F_3 . *Self-Predication is impossible in the theory of Forms*; because the form f_n possessed by Form F_n , and in virtue of which F_n is f , is reified as an *instance* of itself in Plato's theory, and is thereby 'de-formed' into an F_n . *Non-Identity*, thereby, enters the theory, because what makes F_n an f is always different from F_n . In a sense, Plato's theory of Forms is committed to NI precisely because there is no SP of Forms in it (but only, strictly speaking, qualitative similarity among Forms). No wonder contradiction arises by assuming SP among the premises of the TMA!

Vlastos (1954) derives a self-contradiction from the NI and SP premises of the TMA, arguing that this contradiction is the real problem, rather than the regress, which is only a symptom of the problem. However, Vlastos does not see *why* the premises are contradictory; nor *how* Plato could have avoided the contradiction and the regress. Vlastos thinks, as I too contend here, that the problem lies in the Forms' *Self-Predication*:

We could have got the same information [about what's problematic in the Theory of Forms] by a much more economical procedure [than the TMA regress]: by simply noting the *contradiction* which follows from the joint assertion of (A3 [*Self-Predication*]) and (A4 [*Non-Identity*]), as explained above. And if Plato had even got as far as the explicit assertion of (A3 [*Self-Predication*]) itself, he would have found good reason for rejecting it, and would thus have been able to nail down *the exact source of the trouble* that is attested, but not identified, by the infinite regress. (1954: 328–9; my emphasis)

However, Vlastos misunderstands the source of the trouble resulting in the contradiction, as we find out in his further explanation,

To avoid misunderstanding, I should underline the fact that the Self-Predication Assumption to which I refer throughout this paper is

the assertion in (A3) above that any Form may be predicated of itself. Absurdity or contradiction inevitably results from this assertion which implies that Forms predicable of particulars are predicable of themselves [...]. (1954: 329)

I will not discuss here Vlastos's interpretation of the SP, on which he derives a contradiction between the TMA premises, because I take the TMA problem to be different from how Vlastos explains it. It is not that it is absurd to assume *Self-Predication* of Forms among the premises of the TMA; it is, rather, that Plato both *assumes Self-Predication* and also *denies* it, describing exactly why in his theory the Forms are not self-predicational. My conclusion, as argued previously, is that the theory of Forms does *not* allow for *Self-Predication* of Forms.

Vlastos writes about *Non-Identity*:

(A4) If anything has a certain character, it cannot be identical with the Form in virtue of which we apprehend that character. If *x* is *F*, *x* cannot be identical with *F*-ness. This too, though not stated in the Argument, is certainly implied. (1954: 324)

I disagree with several aspects of the statement just quoted, but I will only discuss the assumption itself. Although Plato does not state the *Non-Identity* assumption in the TMA premises, as Vlastos says, Plato does mention it explicitly in the TBA, which I reproduce here once again for the reader's ease of reference:

[...] if he [god] made only two [Forms of bed, *F*₁ and *F*₂], then again one [Form of bed, *F*₃] would come to light *whose form* [*f*₃] they [*F*₁ and *F*₂] in turn would both possess, and that [*F*₃] would be the one which is what 'bed' really is, and not the other two [*F*₁ and *F*₂]. (597c7–9, my emphasis)

[...] εἰ δύο μόνας ποιήσειεν, πάλιν ἂν μία ἀναφανείη ἥς ἐκεῖναι ἂν αὐτὰ ἀμφοτέραι τὸ εἶδος ἔχοιεν, καὶ εἴη ἂν ὃ ἐστὶν κλίνη ἐκεῖνη, ἀλλ' οὐχ αἱ δύο.

Plato reifies only the Form of Bed (F_3), and not the form of Form F_3 as such (i.e., f_3).¹⁶ Thus, there is always *Non-Identity* between each Form of Bed F_n and its respective form of being a bed, its f_n . This is why there cannot be *Self-Predication*. As Plato writes in the passage above, it is not the Form of Bed (namely, F_3), which is what 'bed' really is, that is predicated of the two original Forms of Bed (F_1 and F_2); but rather, the form (f_3) of the Form of Bed (F_3).

Yet, without *Self-Predication* Plato's metaphysics could explain less than it can by being committed to this principle.¹⁷ Why? The claim seems to fly in the face of modern philosophy, as we think that self-predication of properties is a category mistake. But why do modern philosophers think that it is a category mistake (when Plato didn't)? The answer lies in the fact that modern philosophers (for the most part) conceive of properties as concepts or classes, which do not and cannot bear the property they signify, e.g., the concept of redness or class of red things are clearly not red. But let us take the other, Platonic, perspective, for a moment, and question the explanatory costs of this modern view (notwithstanding what its merits may be): it isn't a cost-free view. While pursuing this issue in due depth would take us astray from our main argument, I want to at least note—even if I do not defend the claim here argumentatively—that the explanatory cost of abandoning SP is considerable: in a nutshell, without it, why and how things that possess the property of, e.g., redness, are red is left unaccounted for (and arguably unaccountable).¹⁸

4.8. Quantitative or functional parts of Forms?

We come now to the issues anticipated at the end of section 4.6. I believe that Plato conceives of parts of a Form in two different senses of

¹⁶ In that sense, the Forms that do the predication work in the theory of Forms are always present by 'proxy', in their instances, as Forms.

¹⁷ Although it is not uncontroversial among modern scholars whether Plato retained or abandoned at some point the *Self-Predication Principle*, I hold that he never abandons it, because even as late as the *Timaeus* (30d1–3), things in nature resemble the Forms (the *paradeigma*).

¹⁸ I believe that this is where Aristotle offers the way forward, individuating properties as abstract entities, rather than as concepts.

part in his theory of Forms (although he does not give us any explicit indication that he is aware of their difference; it is only the *Paradox of Smallness* in the *Parmenides* that enables us to gain an insight into the issue). In brief, one sense of part is *functional* and the other is *quantitative*. An analogy can facilitate understanding this distinction: a metro ticket is a functional part of the operation of the metro system in a city; by contrast, the same metro ticket can be a quantitative part of a heap of paper on a desk.

There is no explicit evidence that Plato distinguishes clearly between these two types of part of Forms, or between the ways parts of Forms operate; rather, in the *Partaking Dilemma*, and elsewhere, Plato describes parts of Forms in both ways, as quantitative *and* also as functional (without using this terminology). We saw in sections 4.4 and 4.6 that in the *Partaking Dilemma*, a part of the Form of Smallness in a partaking object qualifies the object as small; its role is functional. However, Plato also tells us that a part of the Form of Smallness is also small *qua* part of that Form, and hence, *qua* quantitative part, smaller than the Form. The part is thus a functional *and* a quantitative part of the Form of Smallness. So is, for instance, the wooden handle of a knife, a functional part as a grip, but a quantitative part of the body of the knife.¹⁹

Is this a problem for Plato's metaphysics? It is, in the sense that it raises a fundamental question, which is, however, never raised or addressed by Plato; namely, in what sense is a part of the Form of Smallness 'small'? The answer depends on the kind of part it is: if it is a functional part, then it is small by the Form's *Self-Predication*, by the Form's being a *homoeomer*, and by the Form's being *monoeides*;²⁰ if it is a quantitative part, it is small (in our conception, rather than by the theory of Forms), because smaller than the whole of which it is part. Is it, therefore, small in two different senses of 'small'?

Would an exclusively functional conception of parts of Forms satisfy the metaphysical requirements of Plato's theory of Forms and of participation? It would allow for the qualitative distribution of a property

¹⁹ However, the goodness of the knife's grip *qua* grip is an altogether different issue from the goodness of the knife, and does not entail it.

²⁰ On the Forms' being *monoeides* and *homoeomers*, see section 5.3 of chapter 5.

to sensible objects, and explain similarity between objects, by the presence of a single part of a Form in each partaking object, which would 'transmit' the Form's property to the object. There are significant problems however that conceiving the parts of Forms functionally raises for Plato. One has to do with the necessary uniqueness of Forms, as per the TBA (see section 4.5); functional parts of a Form multiply the Form with Form-equivalents. The other is that such conception of parts clashes with the *Contagion Principle*, which requires a single source of *f-ness* for every *f*-thing, and the *One Over Many Principle*, according to which there is a single entity standing for each qualitative type (see section 1.4 of chapter 1). Would conceiving of the Forms' parts quantitatively be a more successful move? Ultimately no, insofar as a quantitative part would be tasked to do what the Form does, namely qualify an object as *f* and account for the qualitative similarity of *f*-things, thus behaving metaphysically like the Form and thus multiplying it. There is, however, a fundamental difference between the two types of part, which is never articulated in Plato's work, but which can be derived by drawing a comparison between Plato's functional parts of Forms and Anaxagoras's quantitative parts of Opposites. Functional parts can 'transmit' what we call *structural properties*, but quantitative parts cannot.

We can speculate that one of the reasons why Plato is hesitant, when it comes to explaining the nature of partaking, as, e.g., in the *Phaedo*, as we saw in section 4.3., is the unresolved metaphysical ambiguity in his conception of parts of Forms so far discussed. Anaxagorean quantitative parts can distribute properties such as the Opposites, e.g., the Hot; but they cannot distribute triangularity. Quantitative parts of, e.g., the Form of Heat could qualify the objects they are in as hot, while quantitative parts of Triangularity, could not qualify an object, through their presence in it, with the property of being triangular. It's here that the difference between the functional and the quantitative roles of the parts of a Form becomes significant.

Plato is concerned to include in his ontology Forms that stand for *structural properties*.²¹ Paradigmatic examples of structural Forms

²¹ Recall that by contrast Anaxagoras's ontology does not include structural properties, but reified structures, the seeds.

would be geometrical Forms. We do not have any explicit discussion or even examples of geometrical Forms in Plato's dialogues, but only rare examples of structural Forms; e.g., the structural Form of Bed in the *Republic*. However, we do have two very early examples of a structural Forms in the *Phaedo*; one of the two is one of the very first Forms Plato introduces after the Form of Beauty, namely, the Form of Duality/Twoness:²²

[...] therefore you accept no other cause of the existence of two than participation in duality, and things which are to be two must participate in duality. (101c4-6)

[...] ἐν τούτοις οὐκ ἔχεις ἄλλην τινὰ αἰτίαν τοῦ δύο γενέσθαι ἀλλ' ἢ τὴν τῆς δυάδος μετασχεσιν, καὶ δεῖν τούτου μετασχεῖν τὰ μέλλοντα δύο ἔσεσθαι.

We can now discern a distinction between types of Forms in Plato's ontology: some Forms are stuff-like (e.g., the Form of Heat), and some are structural (e.g., the Form of Duality/Twoness). Another way to put this, which highlights continuity and discontinuity between Plato's and Anaxagoras's conception of properties, is that structural properties, e.g., being two or being a bed, are not *homoeomers*, as their parts are not of the same kind as the whole of which they are parts. It follows that 'transmitting' the property of stuff-like Forms is significantly different than transmitting the property of structural Forms.

We must note that while endorsing *Self-Predication* (as we saw in section 4.7), Plato does not use any type of principle of preponderance in his theory of Forms (which might seem a natural corollary of a quantitative conception of parts of Forms). Anaxagoras does posit that an Opposite qualifies an object only when present in preponderance in it, in relation to the other Opposites, and conceives of preponderance in terms of quantitatively more parts of the Opposite (as we saw in section 2.2 of chapter 2). Plato does not follow Anaxagoras in thinking

²² The Form of Duality/Twoness is a structural Form of particular interest to us because it qualifies two objects in a way that it could not qualify an individual object. We will examine participation in this and likewise) Forms in section 6.2 of chapter 6.

that the presence of a property in an object is strengthened or intensified by the addition of more parts of the property in the object. He never speaks of objects having two or more parts of a Form. This is a significant divergence from Anaxagoras's system; also, a telling divergence. What we learn from the realization that objects partake in one part only of a Form, in each case of partaking, is that for Plato, what is operative is the *presence* of a Form in the object (even by 'proxy', i.e., its part), not the quantity of the Form in the object. Plato's combined commitments to *Self-Predication* and to qualification by the presence of a single part of the Form in an object, suggest that Plato conceives of the part of a Form in an object functionally, where quantity makes no difference, rather than quantitatively, where quantity would make all the difference (as it does in Anaxagoras).

4.9. Closing remarks

We saw in this chapter that Plato has reasons for considering Anaxagoras's model of constitutional overlap metaphysically attractive; yet, he can also see its shortcomings and difficulties, especially when combined with his own theory of Forms. We examined here some of these difficulties, focusing on number of milestones in Plato's thinking, marked by arguments such as the *Partaking Dilemma* in the *Parmenides* and the *Third Bed Argument* in the *Republic*. The *Partaking Dilemma* is also the argument that introduces us to the issues that we will investigate in the next chapter. At its start, the *Dilemma* raises the issue of the compositeness of Forms: If participation in Forms is by having parts of them, does it follow that the Forms exist as divided into parts (as Anaxagoras's Opposites exist as divided into parts, and indeed unlimitedly many parts)? And if divided, is each Form its many (parts), rather than one single (Form)? Plato writes in the *Phaedo*,

'So the Forms themselves are divisible, Socrates,' he said 'and things that partake of them would partake of a part; no longer would a whole Form, but only a part of it, be in each thing.' 'It does appear that way.' 'Then are you willing to say, Socrates, that our one Form is really divided? Will it still be one?' 'Not at all,' he replied. (131c5–11)

Μεριστὰ ἄρα, φάναι, ὦ Σώκρατες, ἔστιν αὐτὰ τὰ εἶδη, καὶ τὰ μετέχοντα αὐτῶν μέρους ἂν μετέχοι, καὶ οὐκέτι ἐν ἐκάστῳ ὅλον, ἀλλὰ μέρος ἐκάστου ἂν εἴη. φαίνεται οὕτω γε. Ἡ οὖν ἐθελήσεις, ὦ Σώκρατες, φάναι τὸ ἐν εἶδος ἡμῖν τῇ ἀληθείᾳ μερίζεσθαι, καὶ ἔτι ἐν ἔσται; Οὐδαμῶς, εἰπεῖν.

The text is indeterminate. Is Plato raising a concern with conceiving of the Forms as having parts that are each functionally equivalent to the whole Form (each of which making its partaker *f*)? Such equivalence would be incompatible with the *One Over Many Principle*, which we know underpins Plato's theory of Forms, and the TBA's conclusion. However, the issue Plato raises in the text may also be given a different reading: Does partaking in a Form divide the Form, rendering it composite? That is to say, Is Plato asking whether the Forms can remain incomposite, even though they are divisible and their parts are in sensible things? To address these questions, we need to first examine how Plato understands compositeness, and its opposite, incompositeness, in relation to the Forms.

Plato makes it clear in the so-called *Affinity Argument* in the *Phaedo* that the Forms could not be composite in the sense of being composed out of parts. The thrust of the *Affinity Argument* is that a thing that is a compound that has been put together is by its nature decomposable, and thus likely to perish—which is an impossibility for the Forms.²³ Plato writes:

‘Is not anything that is composite and a compound by nature liable to be split up into its component parts, and only that which is noncomposite, if anything, is not likely to be split up?’ ‘I think this the case,’ said Cebes. (78c1–5)

Ἄρ’ οὖν τῷ μὲν συντεθέντι τε καὶ συνθέτῳ ὄντι φύσει προσήκει τοῦτο πάσχειν, διαιρεθῆναι ταύτῃ ἥπερ συνετέθη· εἰ δέ τι τυγχάνει

²³ The *Affinity Argument* would deserve extensive discussion and contextualization because of its centrality in other areas of Plato's thought, but for present purposes I will concentrate here only on what we can learn from it in relation to the issue of the partitioning of Forms.

ὄν ἀσύνθετον, τούτῳ μόνῳ προσήκει μὴ πάσχειν ταῦτα, εἴπερ τῷ ἄλλῳ; Δοκεῖ μοι, ἔφη, οὕτως ἔχειν, ὁ Κέβης.

In the lines that follow, Plato associates change with compositeness, and immutability with incompositeness:

‘Are not the things that always remain the same and in the same state most likely not to be composite, whereas those that vary from one time to another and are never the same are composite?’ ‘I think that is so.’ (78c6–9)

Οὐκοῦν ἄπερ ἀεὶ κατὰ ταῦτα καὶ ὡσαύτως ἔχει, ταῦτα μάλιστα εἰκὸς εἶναι τὰ ἀσύνθετα, τὰ δὲ ἄλλοτ’ ἄλλως καὶ μηδέποτε κατὰ ταῦτά, ταῦτα δὲ σύνθετα;
 Ὕμιοιγε δοκεῖ οὕτως.

So, the position emerging from the *Affinity Argument* is that change accompanies compositeness, whereas immutability goes hand in hand with incompositeness. Thus, the Forms on this reasoning need to be incomposite. Yet, the incompositeness of the Forms is in tension with the idea that objects partake of the Forms by possessing parts of the Forms. The commitments of the *Affinity Argument* seem to be at odds with the statements of the *Partaking Dilemma*. The concerns Plato registers in the *Affinity Argument* would apply not only to things that were *generated by composition*, which the Forms were not; but also, I submit, to things which *become composite* by partitioning, which Forms do become. So claiming that the Forms were not generated by composition would not be a way out from the conclusions of the *Affinity Argument*.

Wolfgang-Rainer Mann (2000: 123) argues that there is theoretical tension in Plato's system due the fact that Plato attempts to extend Anaxagoras's conception of physical part to his Forms, which are nonphysical entities (such as, e.g., the Form of Justice).²⁴ Departing

²⁴ Departing from Mann, I want to also highlight the philosophical value of Plato's move of trying to conceptualize how Forms could have parts. By trying to work out how a nonphysical understanding of physical notions of part might be possible, Plato enriches our conception of parthood. The criteria of individuation for nonphysical parts

from Mann, I argue that the most significant difference between Anaxagoras's and Plato's conception of parts of properties is not that for Anaxagoras the Opposites are physical entities and for Plato the Forms are transcendent entities, but rather, that for Anaxagoras the Opposites exist as divided in (unlimitedly many) parts *independently of whether they overlap with objects or not*. For Plato this is not the case.

Speaking generally, overlap as a metaphysical relation between entities does not determine as such whether the entities' overlapping parts are *intrinsic* or *extrinsic* parts of such entities. Some types of overlap divide things intrinsically, e.g., philosophy departments in universities. However, other types of overlap divide things extrinsically, e.g., a shadow on a wall's surface. I submit that for Plato, when sensible objects partake in the Forms and thus overlap with them, they divide the Forms *extrinsically*. I call this *Cambridge Partitioning*: the partitioning of the Forms by their partakers is as 'impactful' on them as Cambridge Change is on things that suffer it.²⁵ There are two considerations that support my proposed interpretation: the first is philosophical, driven by what is sometimes called the *Principle of Charity*: positing that Plato is thinking of the Forms as divided by *Cambridge Partitioning* resolves the difficulties that would otherwise derive from the *Affinity Argument* discussed earlier. The second consideration is textual: there are two examples/analogies that Plato gives in the *Parmenides*, in his effort to explain how partaking in the Forms should be understood, that support my proposed interpretation. The

need to be defined, and this is still work in progress in current philosophy; but Plato's move of positing that there are such parts has creatively opened up new ways of thinking about parthood—this needs to be acknowledged as one of Plato's important philosophical legacies.

²⁵ A Cambridge change is defined as follows by Simon Blackburn in the corresponding entry in *The Oxford Dictionary of Philosophy* (2016, 2d rev. ed.): 'A thing changes in a sense associated with Russell (hence, at Cambridge) if it satisfies a description at one time that it does not satisfy at another. However, some such changes are 'merely' Cambridge changes: if you outgrow me, then I satisfy the description of being as tall as you at one time, and I do not satisfy the description at another. So, by the Cambridge criterion, I have changed, but I need have undergone no robust or substantial change, for I may have stayed at exactly the same height. The term was introduced by P. T. Geach (*Logic Matters*, 1972); a possible application of the notion is to make the unchanging (substantial) nature of God compatible with his (merely Cambridge) changing relations to the temporal world.'

first example is that of one and the same day 'that is in many places at the same time and is none the less not separate from itself' (οὐσα πολλαχοῦ ἅμα ἐστὶ καὶ οὐδέν τι μᾶλλον αὐτῇ, 131b3–5). Here the state of being day overlaps with place, where neither of the two divides the other into intrinsic parts, but only overlapping parts. The second example is that of a sail, which covers many people at once, in such a way that 'a part [μέρος] of it [would] be over one person and another part over another' (131c2–3). Here again, the overlapping of the sail, as a cover, with the places where the people under it are, does not divide either the sail or place over which it is, into intrinsic parts, but only overlapping parts. Plato's arguments in the *Partaking Dilemma* against partaking in parts of Forms do not draw on any of his arguments concerning the incompatibility of parthood with the presupposed incompositeness of the Forms. I claim that this is because Plato understands partaking in Forms as partitioning by overlap, which is *Cambridge Partitioning*. More on the Forms' metaphysical complexity in the next chapter.

The final question I want to raise here is this: Is parthood logically more primitive than overlap, or overlap more primitive than parthood? I will not examine this in relation to contemporary theories of mereology, but in relation to the metaphysical systems of the two pioneers of mereology, Anaxagoras and Plato, whom we are considering here. Anaxagoras develops a theory of gunk, which he applies to his account of properties. An Anaxagorean property or Opposite is uniform and a *homoeomer*, with all its parts being of the same kind as the whole. The parts of a property exist as unlimitedly divided, and together they constitute the property (as the set of parts, i.e., all the physical tropes there are in the world of that kind).²⁶ For Anaxagoras, a particular gunky part of a property belongs to a particular object at a time, and to no other; but it may belong to different objects at other times; specific parts of a property are not individuated by the object they belong to. (For the parts can move in space, due to the action of the cosmic vortex.) This is Anaxagoras's physical 'mechanism' for the distribution and (re)distribution of properties across objects. The concentration or

²⁶ Anaxagoras has no account of logical fusion; but Plato does, as we will see in section 5.2 of chapter 5.

density of the parts of a property in an object determines how the object is qualified.²⁷ When an object is qualified by a property, it overlaps constitutionally with that property, since the object is qualified by possessing parts of that property (in preponderance) within its constitution. What, I argue, is metaphysically very important on this account, is that *parthood is more primitive than overlap*: the gunky parts of a property are individuated and discrete, independently of the property's overlap with objects it qualifies.

Plato is deeply influenced by Anaxagoras; he endorses several of Anaxagoras's ideas, including aspects of his mereology. Plato's properties (pre-*Timaeus*)²⁸ are non-recurrent individuals, the Forms, which are uniform and *homeomers*. However, the parts of a Form do not exist as *divided parts*. An object is qualified by a property, e.g., being hot, by possessing a part of the Form that stands for that property. The part of a Form, e.g., of Heat, which qualifies an object as hot *is individuated by the overlap* of the Form and the object. Hence, a part of a Form belongs exclusively to the qualified object, being individuated by the overlap between the partaking object and the Form; and further, in contrast to Anaxagoras's parts of the Opposites, it cannot belong to any other object at another time. For Plato *overlap is more primitive than parthood*: parts of Forms are individuated by the overlap between the Form and the object it qualifies. The primitiveness of overlap over parthood, which Plato introduced through his system, has significant metaphysical consequences to be explored.²⁹

²⁷ This result is not soundly established by Anaxagoras, but it is a position he is committed to; see Marmodoro, 'Instantiation' (unpublished).

²⁸ As already anticipated *passim*, in the *Timaeus* Plato introduces the *paradigma*, a *über-Form* made up by all the Forms, which are no longer discrete individuals but qualitative aspects of the *paradeigma* which the *Demiurge* copies. I return to this in chapter 7.

²⁹ E.g., overlap may be taken as a logical primitive, and parthood defined in terms of overlap (see, e.g., Simons (1987: 48–50)).

5

Parts, or no parts?

5.1. Introduction

In the preceding chapter we examined, among others, the issue of whether Plato's Forms have parts, which constitutional overlap requires of them. I argued that for Plato sensible objects overlap with the Forms without thereby dividing them *intrinsically* into parts; the Forms are divided by what I called *Cambridge Partitioning*. In this chapter we will consider a different question, also concerning the mereological complexity of the Forms: Is each Form unified, constitutionally, and if so, how? What is the constitutional unity of a Form and what does it entail about a Form's make-up? We saw that (pre-*Timaeus*) the Forms have to satisfy the following metaphysical requirements for Plato:

- a) *Distributiveness*: Forms are such that objects can partake of them by constitutional overlap, and such overlap qualifies an object with the Form's property (as per the *Partaking Dilemma* in the *Parmenides*).
- b) *Uniqueness*: Each Form is unique, and stands for a type of property (as per, e.g., the *Third Bed Argument* in the *Republic*).
- c) *Incompositeness*: All Forms are incomposite (i.e., simple, partless), because immutable and eternal (as per the *Affinity Argument* in the *Phaedo*).
- d) *Uniformity*: All Forms are qualitatively uni-form (μονοειδές), each standing for a single type of property (as we will see in the *Theaetetus*).

These requirements pose a formidable metaphysical challenge for Plato. In investigating this challenge and how Plato addresses it, I will also draw some connections and contrasts between Plato's metaphysics of Forms, and key tenets of Aristotle's metaphysics, such as his

hylomorphism, his conception of the unity of substance, and his metaphysics of mixtures. The core aim in this chapter remains, however, to explore the conceptual resources available to Plato for thinking of the Forms as he did, or as he needed to think of them, given what he held true about them.

5.2. The Forms as logical fusions

Constitutional overlap presupposes that the Forms have parts, as per *Distributiveness*.¹ Is it surprising that Plato does not address the problem of the compositeness of Forms, as we would have expected him to do when he explicitly says that things partake in parts of Forms in the *Partaking Dilemma*? I argue that it is not surprising, if Plato is thinking of partaking in parts of Forms through overlap (in a modified way from the original Anaxagorean position). For Anaxagoras the Opposites exist as divided in (unlimitedly many) parts *independently of whether they overlap with objects or not*. For Plato this is not the case. As we saw at the end of chapter 4, overlap as a metaphysical relation between entities does not determine as such whether the parts ‘carved out’ by overlap between entities, i.e., the overlapping parts, are *intrinsic* or *extrinsic* parts of such entities. Some types of overlap divide things intrinsically, e.g., philosophy department in universities. However, other types of overlap divide things extrinsically, e.g., as a shadow on a wall divides the surface of the wall. I submit that things partaking of Forms overlap with the Forms *extrinsically*; therefore the Forms’ parts are individuated extrinsically. I call this *Cambridge Partitioning*: the partitioning of the Forms by their partakers is as ‘impactful’ on the Forms as Cambridge Change is on things that suffer it. There are two sets of reasons that support my proposed interpretation: the first is philosophical, driven by what is sometimes called the *Principle of Charity*: my proposal that what is involved in *Cambridge Partitioning* resolves the tension concerning the Forms’ complexity deriving from the *Affinity Argument* discussed previously. Further,

¹ However, these parts are *extrinsically* individuated, as we will see in what follows.

there are two examples/analogies that Plato gives in the *Parmenides*, in his effort to explain how partaking in the Forms should be understood, that support my proposal. I find the examples paradigmatically helpful in showing how overlap partitions without 'separating' parts. The first example is that of a 'day, which is one and the same [. . .] in many places at the same time and is none the less not separate from itself' (οἷον εἰ ἡμέρα εἴη μία καὶ ἡ αὐτὴ οὐσα οὐσα πολλαχοῦ ἅμα ἐστὶ καὶ οὐδέν τι μᾶλλον αὐτὴ αὐτῆς χωρὶς ἐστίν, 131b3–5). Here the state of 'being day' overlaps with extended place, where neither of the two divides the other into intrinsic parts, but only overlapping parts. The second example is that of a sail, which covers many people at once, in such a way that 'a part [μέρος] of it [would] be over one person and another part over another' (131c2–3). Here again, the sail overlaps, as a cover, with the places where the people under it are, but neither the sail nor the place over which the sail is divides the other into intrinsic parts, but only into the parts of their overlap. Plato's arguments in the *Partaking Dilemma* against partaking in parts of Forms do not draw on any of his arguments concerning the incompatibility of parthood with the presupposed incompositeness of the Forms. I claim that this is because Plato understands partaking in Forms as partitioning by overlap, namely, *Cambridge Partitioning*.

However, even if the Forms' parts are only extrinsically individuated parts, by *Cambridge Partitioning*, their existence *qua* parts threatens to undermine another presupposition of Plato's theory: *Incompositeness*. Further, there are Forms that stand for structural properties (which we encountered in section 4.8 of chapter 4), such as the Form of Duality/ Twoness or of Equality/the Equals; they challenge *Uniformity* too, on account of their intrinsic structure. I argue that in response to these potential difficulties for his theory of Forms and of participation, Plato develops in the *Theaetetus* a conception of Forms as *logical fusions* of their parts, in an argument which I call the *Dilemma of Composition*. This conception of Forms is underpinned by a theory of composition and metaphysical complexity that is a breakthrough on Plato's part, which we need to identify and comprehend for its value in the history of metaphysics.

Plato introduces the *Dilemma* in discussing an epistemological problem (at 201d–210a), namely, whether a composite and its elements

are equally knowable or not; he addresses the problem by examining the ontology of a complex entity and its elements. He argues that a complex entity and its elements are equally knowable (namely, either they are both knowable, or neither is; see 205d–e). To show this, he examines whether the elements that make up a complex entity compose into one or remain many and, accordingly, how the entity relates to the elements that make it up. Thus, the *Dilemma* is a metaphysical argument, whose conclusions Plato uses for his epistemological problem. We are not interested here in the epistemological problem, but only in what the *Dilemma* shows us about Plato's understanding of composition of complex entities.

The central question driving the argument in the *Dilemma* concerns which metaphysical relations hold between the following 'components' of an entity: (i) *all the elements* that make up the entity (ἅπαντα), (ii) their *totality* (πᾶν), (iii) and the *whole* they make up (ὅλον).² There are three accounts of mereological composition that Plato considers; but only two of the three have been identified in the scholarship.³ That we have identified hitherto only two of them is not surprising, because Plato's mereology is richer 'by a concept' than our understanding of it in current metaphysics. We think of the parts of a whole and the whole, or the members of a class and the class. Plato, on the other hand, thinks that there is one more entity that needs to be considered in addition to the parts and the whole, namely the totality of the parts (τό πᾶν). Plato's three accounts of mereological composition are the following:

- Account 1: The whole of a complex thing (ὅλον) = the totality of the thing (πᾶν) = all its component parts (ἅπαντα). (205a7–9)

² In quoting the *Dilemma* I will use McDowell's translation, except that I will translate πᾶν (which he translates with 'sum') with 'totality'.

³ My interpretation differs from that of Verity Harte (2002): she assumes that what I call the *Dilemma of Composition* and the surrounding discussion concern 'a position which he [Plato] takes to be false, but whose problems he is concerned to explore' (p. 5); a 'rejected model' (p. 4) for thinking about composition; an 'understanding of composition there to be problematized, not endorsed' (p. 117; see also p. 267); while on my interpretation the *Dilemma* expresses Plato's own position concerning parts-whole relations within things in world, and within the transcendent Forms, as I will argue in what follows.

- Account 2: The whole of a complex thing (ὅλον) ≠ (the totality of the thing (πᾶν) = all its component parts (ἅπαντα)). (204e5–9)⁴
- Account 3: The whole of a complex thing (ὅλον) is all there is, arising out of parts but having no parts. (204a6–b3)

I will show that Account 3 describes an ontology of complex entities that solves the difficulties Plato faces in accounting for how even structural Forms are both incomposite and uniform; additionally, I argue that with Account 3 Plato sets a milestone in the history of metaphysics. I will discuss the three accounts in turn.

The first account has two parts; in the first, Plato argues that *The Totality = All the Parts*, and in the second, that *The Whole = (The Totality = All the Parts)*; the resulting position is that *The Whole = The Totality = All the Parts*.

- Account 1, part 1: *The Totality = All the Parts*

On this account, the *totality of the parts* in a thing is *all the parts* of the thing. The totality is identical to all the parts; but the totality is referred to as *one* thing, while all the parts as *many*. (This metaphysical account of composition may be illustrated in English with cases such as the police being identical to the policemen; or the football team to the football players, etc.). What is the metaphysical significance of this position? Through the identity of the totality with its parts, Plato is registering here that we can refer to the parts of a thing collectively, as *one*, without *turning the them into one entity*; despite the mode of reference, the totality is of *the same number* as the many parts of the thing.⁵ This is the position, known in current metaphysics as *extensional mereology*, which we associate with David Lewis. Lewis describes it thus:

⁴ This is the position within Plato's argument that had not been identified in the scholarly literature thus far.

⁵ Plato introduces the concept of the number of a thing, which we do not possess, by which he means the number of *parts* the thing has (ultimately, its elemental parts): 'S: But the number of things, in each case, is nothing but parts? T: Yes.' (204e1). On this basis, Plato derives '*The totality = All Parts*,' using the concept of the *number* of an object, namely, by arguing that the number of the totality is the same as the number of all the parts.

I say that composition—the relation of part to whole, or better, the many–one relation [...]—is like identity. The ‘are’ of composition is, so to speak, the plural form of the ‘is’ of identity. Call this the Thesis of *Composition as Identity*. It is in virtue of this thesis that *mereology is ontologically innocent: it commits us only to things that are identical, so to speak, to what we were committed to before*. (1991: 82; my emphasis)

Plato’s Account 1 is aligned with Lewis’s position. But the jury is still out as to whether Plato endorses it or not, and if ‘yes’, for what type of entity in his system.⁶

- Account 1, part 2: *The Whole* = (*The Totality* = *All the Parts*)

Plato produces two different arguments in the *Dilemma* to establish that *The Whole* = *The Totality* (and so, = *All the Parts*, since that *The Totality* = *All the Parts* has already been established). Both arguments are semantic. The structure of his reasoning is as follows:

- i. The first argument shows that $\pi\acute{\alpha}\nu$ and $\acute{\alpha}\pi\alpha\nu\tau\alpha$ are *co-referential* (204b–d).⁷
- ii. The second argument shows that $\acute{\omicron}\lambda\omicron\nu$ and $\pi\acute{\alpha}\nu$ are *synonyms* (205a).⁸

⁶ For clarity: I here claim that Account 1 (including both part 1 and part 2) is aligned with Lewis’s position, so nothing is lost in translation (of $\pi\acute{\alpha}\nu$ and of $\acute{\omicron}\lambda\omicron\nu$ into Lewinian English).

⁷ ‘S: And what about this: is all [$\acute{\alpha}\pi\alpha\nu\tau\alpha$] at all different from the all [$\pi\acute{\alpha}\nu$]? For instance, when we say “one, two, three, four, five, six”, or “twice three”, or “three times two”, or “four plus two”, or “three plus two plus one”, are we talking about the same thing in all these cases, or something different? T: The same thing. S: Namely, six? T: Yes. S: Now in each utterance [using $\acute{\alpha}\pi\alpha\nu\tau\alpha/\pi\acute{\alpha}\nu$] we’ve spoken of six in all [$\pi\acute{\alpha}\nu\tau\alpha$ $\acute{\epsilon}\xi$]? T: Yes. S: And is there no all that we speak of [$\pi\acute{\alpha}\nu$, the aggregate] when we speak of all of them [$\acute{\alpha}\pi\alpha\nu\tau\alpha$]? T: There must be one. S: Namely the six [$\tau\acute{\alpha}$ $\acute{\epsilon}\xi$, i.e., the six units = $\acute{\alpha}\pi\alpha\nu\tau\alpha$ and hence = the aggregate, $\pi\acute{\alpha}\nu$]? T: Yes. S: So in the case of anything which consists of a number of things [of parts], it’s the same thing we’re referring to when we speak of all [$\pi\acute{\alpha}\nu$] and when we speak of all the things [$\acute{\alpha}\pi\alpha\nu\tau\alpha$]? T: Evidently.’

⁸ ‘S: [...] But isn’t all [$\pi\acute{\alpha}\nu$] precisely what you have when there’s *nothing missing*? T: Yes, that must be so. S: And won’t a *whole* [$\acute{\omicron}\lambda\omicron\nu$] be that same thing: that from which *nothing at all is missing*. If a thing has something missing from it, it’s neither a whole [$\acute{\omicron}\lambda\omicron\nu$] nor all [$\pi\acute{\alpha}\nu$] [...]’ (my emphasis).

- iii. From i and ii, Plato derives that that ὅλον and ἅπαντα are *co-referential* (205a).⁹
- iv. From i and iii, Plato draws the overall conclusion:
ὅλον = πᾶν = ἅπαντα (205a7–9).

Plato describes this conclusion as necessary: 'S: Because with anything which has parts, it's necessarily the case [ἀνάγκη] that the whole [ὅλον] is all the parts [πάντα μέρη, hence, also = πᾶν].'¹⁰ The conclusion however doesn't follow: (iii) is not derived soundly. Plato argues incorrectly that, if 'πᾶν' is a synonym of 'ὅλον' (ii), then they are co-referential, which is needed for (iii). This does not follow, because Plato has established only their *partial synonymy*; if 'πᾶν' means 'nothing is missing' and 'ὅλον' means 'nothing is missing, *unless the types of thing that could be missing are the same*, it does not follow that two complex entities 'without anything missing' contain the same items and, hence, that the terms that refer to them are co-referential. For example, if 'πᾶν' refers to all the *parts*; and 'ὅλον' refers to all the *components*; then, although neither is missing anything, since the former refers to 'all' the parts and the latter to 'all' the components, the components of ὅλον may be different from the parts of πᾶν, and so ὅλον and πᾶν are not co-referential—as, e.g., Aristotle showed in his *Syllable Argument* (in *Metaphysics* 1041b25–6), where the substantial form is a *component* but not a *part* of a substance.¹¹ So, 'πᾶν' and 'ὅλον' are not co-referential.

Notwithstanding the logic of the argument being flouted, it remains a question for us to address, whether Plato holds this account of composition, and may be identified (in modern terms) as an *extensional mereologist*, or not. My views differ from those of Verity Harte (as already anticipated in footnote 124), who reads Plato as considering

⁹ 'T: it seems to me now that there's no difference between a *sum* and *whole* [πᾶν καὶ ὅλον]. S: And we've been saying that if something has parts, the whole [ὅλον] and the sum [πᾶν] will be all the parts [τὰ πάντα μέρη]? T: Yes. [because of the co-reference of ὅλον, πᾶν and ἅπαντα]' (my emphasis).

¹⁰ The line in Greek is: ὅτι οὐ ἂν ἦ μέρη, τὸ ὅλον ἀνάγκη τὰ πάντα μέρη εἶναι (204a7–8).

¹¹ Aristotle also held, by contrast to our contemporary David Lewis, that the properties in a whole are *not parts* of the whole, although they are *components* of it, as he writes in the *Categories*, 1a24–5, on which I say more here at p. 86).

two models of composition in the *Dilemma* but endorsing one only as his own: the extensional model (on which the whole is identical to its parts) is the one that Plato, according to Harte, explores ‘to expose the problems that its adoption creates’ (2002: 267) and rejects, in favour of the alternative one, according to which composition is restricted and wholes are ‘contentful structures’ (2002: 268 and elsewhere). I disagree with both sides of Harte’s interpretation, for reasons that will become clear later in this section.

My reading of the *Dilemma* is that Plato shows himself to be an extensional mereologist with respect to the ontology of *objects in the world*: ‘with anything which has parts, it’s necessarily the case [ἀνάγκη] that the whole [ὅλον] is all the parts’ (204a7). Additionally, making a similar point to the one David Lewis makes (quoted earlier, p. 83), Plato writes:

S: And what about this: is all [ἅπαντα] at all different from the all [πᾶν]? For instance, when we say ‘one, two, three, four, five, six,’ or ‘twice three,’ or ‘three times two,’ or ‘four plus two,’ or ‘three plus two plus one,’ are we talking about the same thing in all these cases, or something different? T: The same thing. S: Namely, six? T: Yes. (204b10–c5)

(As we saw, by contrast, Aristotle explicitly denies extensional mereology with respect to substances, and argues for his denial of it with the *Syllable Regress* of his *Metaphysics* VII.17. There, Aristotle shows that the item needed for explaining the unity of a substance *cannot be a further element* of the substance, but is the form of the substance, which is not like the elements, but like a ‘principle’ governing the elements. It follows that for Aristotle, by contrast to Plato, a substance is made up by parts (its reidentified elements) plus its unifying form, which is not a part.)¹²

Yet, the claim that Plato is an extensional mereologist with respect to the ontology of objects in the world needs to be nuanced. Even if Plato thought that the parts of Forms in things are parts of objects

¹² I here adopt Scaltsas’s interpretation of Aristotle’s metaphysics of substance known as *substantial holism*, which I develop further in Marmodoro (2013) and (2020).

(e.g., that a part of the Form of Heat in a fire is part of the fire), it would be difficult to generalize this stance to cases such as that of two things partaking of the Form of Duality/Twoness (*Phaedo* 101c, already introduced in chapter 4 as an example of a structural Form). In this case (as we will discuss in section 6.2 of chapter 6), the pair shares a single part of Duality/Twoness between them; neither of the two can have a part of Duality/Twoness wholly in itself, because neither of them, singly, is two. Nor do they each have a *part of a part* of Duality/Twoness in them, because there are no parts of parts of Forms in Plato's theory. So, I conclude that Duality/Twoness is *present* in each of two things, *without being a discrete part* in them.¹³ (This is precisely what Aristotle describes already in his earliest metaphysical work—the *Categories*: 'By being "present in a subject" I do not mean present as parts are present in a whole, but being incapable of existence apart from the said subject'. I take Aristotle's *Syllable Regress* in *Metaphysics* VII.17 to be his metaphysical argument for the claim in the *Categories*, just quoted, that properties are present in things, but not as parts (elements) of things.)

For now, the conclusion of our analysis of Account 1 in the *Dilemma* is that Plato is an extensional mereologist with respect to the ontology of sensible objects, but allows for both *discrete and non-discrete parts* in the complex resulting from mereological composition—in this respect his position is distinctive and different from that of modern mereologists like David Lewis; and in some other respect his position anticipates Aristotle's metaphysics of substance, by allowing composites whose parts may not be discrete, as in the case of the parts of the Form of Duality/Twoness in things.

We turn now to the second account of mereological composition that Plato examines in the *Dilemma*.

- Account 2: The whole of a complex thing \neq (the totality of the thing = all its component parts).

¹³ My suggestion is that we encounter first Aristotle's idea in Plato's notion of *joint partaking* in the Forms, e.g., joint partaking in Duality, which is *present non-discretely* in pairs of things. We will return to joint partaking in section 6.2 of chapter 6.

The position entertained here is counterintuitive. Plato seems to be mapping out conceptual space, rather than developing his own metaphysics. According to this account, mereological composition is such that parts make up a whole which does *not* have them as parts. Thus, the composed whole is one and is partless. What is metaphysically challenging about this position is that the parts remain *in existence* (discretely) when the composed whole emerges, but they remain only as parts *of the totality*, rather than parts *of the whole*.¹⁴ Thus, consistently with this stance, the whole is different from the totality, and different from all the parts. Yet, all three co-exist. In Plato's words,

S: Well then, do you call the totality [of the parts] and the whole the same thing, or two different things?

T: [...] I'll take a risk and say that they're different. (204a10–b3)

Σ. τὸ δὲ δὴ πᾶν καὶ τὸ ὅλον πότερον ταῦτόν καλεῖς ἢ ἕτερον ἐκότερον;

Θ. [...] παρακινδυνεύων λέγω ὅτι ἕτερον.

The understanding is that both, the *totality* (of the parts) and the *whole*, exist in the thing; and, per hypothesis, the *parts* exist too, as parts of the *totality*, even if *not of the whole*:

S: So the whole doesn't consist of parts. Because if it were all the parts, it would be the totality. [...] But is a part a part of anything in the world but the whole?

T: Yes, of the totality. (204e8–11, my emphasis)

Σ. τὸ ὅλον ἄρ' οὐκ ἔστιν ἐκ μερῶν. πᾶν γὰρ ἂν εἴη τὰ πάντα ὃν μέρη [...] μέρος δ' ἔσθ' ὅτου ἄλλου ἔστιν ὅπερ ἔστιν ἢ τοῦ ὅλου;

Θ. τοῦ παντός γε.

¹⁴ In saying that a whole 'emerges' I expect I will surprise the modern reader, because we nowadays tend to use the term 'emergence' to designate the coming about of something novel from parts or constituents, while Plato here entertains the possibility that a whole emerges from constituents *which are not its parts*. In so doing, I am drawing the reader's attention to the fact that there is something innovative about Plato's thinking, that goes beyond what we nowadays think about emergence.

The whole is different from the totality, and different from all the parts.
Yet, all three exist in the thing:

S: Or do you say that a whole, too, is some one kind of thing [ἐν τι εἶδος] which has come into being out of the parts and is different from all the parts?

T: Yes. (204a7–8)

Σ. ἢ καὶ τὸ ὅλον ἐκ τῶν μερῶν λέγεις γεγονὸς ἐν τι εἶδος ἕτερον τῶν πάντων μερῶν;
Θ. ἔγωγε.

Plato is saying that the whole is not identical to its parts, but also, that the parts are different from the whole; so, the parts are a type of component of the whole, from which the whole came into being, but they persist in the whole which is different from all the parts.

Plato rejects Account 2, i.e., that the whole of a complex thing \neq (the totality of the thing = all its component parts). To reject Account 2, Plato uses the argument based on the synonymy of 'ὅλον' and 'πᾶν' to prove their co-reference, and Theaetetus is led to conclude: 'I think now that there is *no difference* between all and whole' (δοκεῖ μοι νῦν οὐδὲν διαφέρειν πᾶν τε καὶ ὅλον. 205a6). We saw earlier, however, that Plato's synonymy argument is not sound; hence, Plato's rejection of Account 2 is not sound.

Turning now to third account:

- Account 3: The whole of a complex thing is all there is, arising out of parts, but having no parts.

Let us start with Plato's own description of this position (which I extract from the text below, abridged to highlight the crucial philosophical claims of interest to us here):

S: If it's not the case that a complex is its elements, then isn't it necessarily the case that it doesn't have the elements as parts of it [...]?

T: Yes.

[...]

S: But if it's not the elements that are parts of a complex, can you tell us any other things which are parts of a complex, but not elements of it?

T: Certainly not.

[...]

S: So according to what you are saying now, Theaetetus, a complex would be some absolutely single kind of thing, not divisible into parts.

T: Apparently.

[...]

S: And wasn't the reason precisely its being single in form and not divisible into parts? Because I can't see any other.

T: No, there doesn't seem to be any other.

S: And now the complex has fallen into the same class as the element, given that it doesn't have parts and is a single kind of thing?

T: Yes, that's quite true. (205a10–d6)

Σ. εἴπερ ἡ συλλαβὴ μὴ τὰ στοιχεῖα ἐστίν, ἀνάγκη αὐτὴν μὴ ὡς μέρη ἔχειν ἑαυτῆς τὰ στοιχεῖα [...];

Θ. οὕτως.

[...]

Σ. τί δ' ; εἰ μὴ τὰ στοιχεῖα συλλαβῆς μέρη ἐστίν, ἔχεις ἄλλ' ἅττα εἰπεῖν ἃ μέρη μὲν ἐστὶ συλλαβῆς, οὐ μέντοι στοιχεῖα γ' ἐκείνης;

Θ. οὐδαμῶς. [...]

Σ. ὦ Θεαίτητε, κατὰ τὸν νῦν λόγον μία τις ἰδέα ἀμέριστος συλλαβὴ ἂν εἴη.

Θ. ὅκειν.

[...]

Σ. ἢ οὖν ἄλλη τις ἢ αὕτη ἢ αἰτία τοῦ μονοειδὲς τε καὶ ἀμέριστον αὐτὸ εἶναι; ἐγὼ μὲν γὰρ οὐχ ὁρῶ ἄλλην.

Θ. οὐ γὰρ οὖν δὴ φαίνεται.

Σ. οὐκοῦν εἰς ταῦτόν ἐμπέπτωκεν ἡ συλλαβὴ εἶδος ἐκείνῳ, εἴπερ μέρη τε μὴ ἔχει καὶ μία ἐστὶν ἰδέα;

Θ. παντάπασιν μὲν οὖν.

The question that the passage raises for us, but does not address, is this: How does a complex come into being from the elements which are not parts of it? In the modern literature, there have been two attempts

to work out the answer that Plato does not give, in the text just quoted. Theodore Scaltsas (1990 and 1994) and Verity Harte (2002)¹⁵ have argued that when talking about a single uniform Form, Plato is gesturing towards the idea that the original parts of the complex are reidentified in terms of the arising form (Scaltsas), or is endorsing the idea that the original parts are reidentified by the relations giving rise to the whole (Harte). Scaltsas argues that this Platonic position can be thought of as a proto-Aristotelian one, anticipating the metaphysical role of the substantial form in Aristotle's theory of substance. The latter, on his reading, involves the unification of the parts of a whole through their reidentification in terms of their roles in the whole, as determined by the substantial form (e.g., as in the case of the unification of the parts of a computer by reidentifying them on the basis of their functionality within the computer). Scaltsas writes,

We have already encountered this conception of a complex individual (which has constituents, though not parts) in Plato, mentioned as a possibility, but not further explored. The nature of such an individual is fully developed in Aristotle. For Aristotle, the substantial form of a substance unifies the various components from which the substance is made up into one whole. (1990: 586)

Scaltsas's explanation of this conception is that 'They [the components of a substance] are incorporated into the substantial whole by being reidentified, in accordance with the role they have in the whole (dictated by the substantial form)' (1994: 108).¹⁶ I submit that reidentifying the constituents of a complex entity in terms of their role, which is determined by the substantial form, is *one way* of unifying a complex of

¹⁵ With reference to how I reported at pp. 84–5 the overall interpretation of the *Dilemma* given by Harte, what follows here is her explanation of what she considers the second model of composition Plato discusses *and* endorses, one according to which composition is restricted and 'wholes are "contentful structures"' (2002: 268 and elsewhere).

¹⁶ Scaltsas's interpretation of Aristotle's account of the unity of substance via the reidentification of the parts is grounded on Aristotle's *Homonymy Principle*: 'it is not a finger *in any* state that is the finger of a living thing, but the dead finger is a finger only homonymously' [i.e., same in name, but different in definition] (*Metaphysics* 1035b23–5).

elements into one, Aristotle's way. However, against Scaltsas' suggestion, I argue that this is not what Plato describes in Account 3 in the *Theaetetus*. According to Plato, the Form does not reidentify the elements; rather, the Form 'supersedes' the elements: 'a complex would be some absolutely single kind of thing [μία τις ἰδέα], not divisible into parts [ἀμέριστος]' (205c1–2), which 'doesn't have the elements as parts [μὴ ὡς μέρη]' (see 205b6).

Harte on the other hand does not draw a comparison with Aristotle, but talks of the *relational structure* (rather than the substantial form) of a complex entity as what determines the identity of the elements that enter into the structured composition, thus reidentifying them. Harte gives the example of guests at a dinner party to illustrate how the elements are (supposedly) reidentified by entering a relational structure: 'guests will be essentially things that are seated in this way. The parts—the guests—are thus not identifiable independently of the structure of the whole they compose' (2002: 161). Harte further writes,

In Plato's conception of wholes, structure is no less essential to the parts of such a whole than to the whole itself. The parts of such a whole are structure-laden; that is, *the identity of the parts is determined only in the context of the whole they compose*. (2002: 268–9, my emphasis)

In response to Scaltsas and Harte, I submit that Plato explicitly rejects the view that the elements making up a complex entity get reidentified as parts of it. For Plato, if a complex has parts, these are its original elements; there aren't reidentified parts in it:

S: If it's not the elements that are parts of a complex, can you tell us any other things [e.g., re-identified dinner-guests] which are parts of a complex, but not elements of it?

T: Certainly not. If I conceded that it had any parts, Socrates, it would surely be absurd to leave its elements on one side and resort to something else. (205b7–9)

Σ. εἰ μὴ τὰ στοιχεῖα συλλαβῆς μέρη ἐστίν, ἔχεις ἄλλ' ἅττα εἰπεῖν ἃ μέρη μὲν ἐστὶ συλλαβῆς, οὐ μὲντοι στοιχεῖά γ' ἐκείνης;

Θ. οὐδαμῶς. εἰ γάρ, ὦ Σώκρατες, μὴ ἂν αὐτῆς συγχωροίην, γελοῖόν που τὰ στοιχεῖα ἀφέντα ἐπ' ἄλλα ἰέναι.

So, if it is not by reidentification of the parts, as I have argued it isn't, how does the new incomposite entity arise out of the elements that make it up? Plato does not describe the metaphysical 'mechanism' by which this happens, but he does describe the outcome, in Account 3, using the distinctive term that he coined in his works to describe metaphysically the Forms: *μονοειδές*, as well as the terms *ἄμερές*, *ἄμέριστον*, and *ἓν*, as we saw earlier.¹⁷ I assume that when the whole is partless, the elements making it up must cease to be numerically discrete in the whole; the whole is one in the sense of being partless and indivisible into parts. Thus, the requisite type of mereological composition must eliminate the numerical discreteness of the elements. It is left up to us to reconstruct how. To this end, I identify three ways in which Plato conceives of oneness for us to examine: oneness as resulting from *fit*, *holism*, and *fusion* respectively—the first is mentioned in the *Theaetetus's Dilemma*; the second in the *Protagoras* and in the *Theaetetus*, following the *Dilemma*; and the third in the *Symposium* (and in the *Protagoras*). I will introduce and compare them in terms of how they can satisfy Plato's *desideratum* here, namely, to deliver a complex that is partless (*ἄμερές* and *ἄμέριστον*, just as Plato describes it).

Fit: on the first model, the elements that compose into one thing *fit together*, like bricks making up a wall, or like the letters 'ε' and 'υ' of the first syllable of the word 'εὔρηκα'. In Plato's words,

S: Well then, let's suppose it's as we're saying now: a complex is one kind of thing which comes into being out of each set of elements that fit together, and that goes for letters and everything else alike.

T: Yes.

S: In that case, it mustn't have parts. (204a1–5)

Σ. ἐχέτω δὴ ὡς νῦν φαμεν, μία ἰδέα ἐξ ἐκάστων τῶν συναρμοσπόντων στοιχείων γιγνομένη ἢ συλλαβή, ὁμοίως ἓν τε γράμμασι καὶ ἐν τοῖς ἄλλοις ἅπασι.

¹⁷ I give in section 5.3 an argument for why for Plato what is *monoeides* must be partless.

Θ. πάνυ μὲν οὖν.

Σ. οὐκοῦν μέρη αὐτῆς οὐ δεῖ εἶναι.

Let us begin by examining the meaning of the key term in this passage: συναρμόττω. Liddell and Scott differentiate various nuances of the meaning of this verb, one of which is ‘to fit together’, precisely with reference to Plato’s use of it in our passage. There are different ways of conceiving how elements can fit together; we will examine which might be the one Plato has in mind, given that he does not articulate his thought in our passage. One way is that in which the pieces of a mosaic or of a puzzle fit together (let us consider them for present purposes as both presupposing the same type of fit). Another way is that in which chess pawns fit together in their positions on a chessboard. The difference between the two ways is that in the first, the pieces *constitute the structure* of the image themselves, through their fitted-differences; in the second one, the structure is external to the pieces: they are *fitted into the structure*. We know that the context in the *Theaetetus* (204a) is one where fitting together results in the unity of the elements into something over and above themselves: ‘A complex is one kind of thing which comes into being’. Which of the ways of fitting together I distinguished might capture best what Plato is after? Let us consider the chess pawns option first: the elements making up the complex fit into a structure that has places for these elements.¹⁸ The main reason why I do not consider this to be what Plato is thinking of, is that he has no counterpart in his ontology for such structures. Let us consider the mosaic pieces option then. Can we think of ‘fitting together’ (understood along the mosaic analogy) as the converse of ‘being discontinuous and discrete’? Does this type of metaphysics of composition deliver what Plato is looking for in the *Dilemma*, namely, a complex that is partless and indivisible? The answer has to be in the negative; elements that fit together remain nevertheless numerically discrete, thus their resulting complex would not be partless and indivisible.

¹⁸ This is the type of fit Anaxagoras’s Opposites have around the seeds, which provide frames with places for the shares of the Opposites to occupy (see section 2.4 of chapter 2).

Holism: we find the second model introduced in the *Protagoras*, thus:

[. . .] 'Virtue is a single entity, and the things you are asking about are its parts.' 'Parts as in the parts of a face: mouth, nose, eyes, and ears? Or parts as in the parts of gold, where there is no difference, except for size, between parts or between the parts and the whole?' 'In the former sense, I would think, Socrates: as the parts of the face are to the whole face.' (329d3–e1)

[. . .] ἐνὸς ὄντος τῆς ἀρετῆς μέρη ἐστὶν ἃ [i.e., δικαιοσύνη καὶ σωφροσύνη καὶ οὐσίου καὶ πάντα ταῦτα] ἐρωτᾷς. πότερον, ἔφη, ὥσπερ προσώπου τὰ μέρη μέρη ἐστὶν, στόμα τε καὶ ῥίς καὶ ὀφθαλμοὶ καὶ ὤτα, ἢ ὥσπερ τὰ τοῦ χρυσοῦ μέρη οὐδὲν διαφέρει τὰ ἕτερα τῶν ἑτέρων, ἀλλήλων καὶ τοῦ ὅλου, ἀλλ' ἢ μεγέθει καὶ σμικρότητι; ἐκείνως μοι φαίνεται, ὦ Σώκρατες, ὥσπερ τὰ τοῦ προσώπου μέρη ἔχει πρὸς τὸ ὅλον πρόσωπον.

Plato is looking for a model of oneness that shows virtue to be one in a more integrated way than (e.g.) grains of sand next to each other. His choice of examples in the passage is telling; both examples accommodate this requirement, but in different ways. The example of gold does not account for the fact that the parts of virtue, i.e., the particular virtues, differ qualitatively from one another; its applicability presupposes *homoeomers*, and virtues are not *homoeomers*. The example that Plato finally prefers is that of a face and its parts, which we, post-Aristotle, understand is holistically integrated on account of the functional roles the parts have in it. Plato does not give any explicit metaphysical account of holism, but the text makes it clear that he does understand that the parts of the face are somehow integrated in relation to the face *as a whole* (ἔχει πρὸς τὸ ὅλον, 329e1). I argue that we encounter holism in Plato's work also in the *Theaetetus*, where Plato displays a deeper understanding of holistic interdependence than in the *Protagoras*. Plato argues that one does not have knowledge of a syllable if one can correctly identify the syllable in one context but not in another context:

Well now, when someone at that sort of stage is writing ‘Theaetetus’, and thinks he ought to write ‘T’, ‘H’, ‘E’, and he does so; and then again when setting out to write ‘Theodorus’, he thinks he ought to write ‘T’, ‘E’, and he does so: shall we say he knows the first syllable of your names? (207e–208a) [To which Theaetetus’s answer is in the negative.]

ὅταν ἐν τῷ τοιούτῳ καιρῷ ‘Θεαίτητον’ γράφων τις θῇτα καὶ εἰ οἴηται
τε δεῖν γράφειν καὶ γράψῃ καὶ αὖ ‘Θεόδωρον’ ἐπιχειρῶν γράφειν ταῦ
καὶ εἰ οἴηται τε δεῖν γράφειν καὶ γράψῃ, ἄρ’ ἐπίστασθαι φήσομεν
αὐτὸν τὴν πρώτην τῶν ὑμετέρων ὀνομάτων συλλαβὴν;

In the example Plato considers, the speller fails to recognize that the syllable ‘The’ is the same in its two occurrences in two different names. Because of this failure, Plato argues that the speller does not have knowledge of the syllable. It is not the case that the person has no cognitive grasp at all of the syllable; in fact, s/he spells it correctly in writing the first name ‘Theaetetus’. Rather, the speller has only *partial* knowledge of the syllable, because s/he identifies it correctly in some occurrences, but fails to identify it in other occurrences. That is, Plato identifies that there is an epistemic interdependence between the occurrences of ‘The’ in different contexts, which constitute knowledge of that syllable, which the speller does not possess. This is another case of holism we find in Plato; but again, as in the *Protagoras*, he does not give any metaphysical explication of the case. As I argue in what follows, Plato does not work out anywhere a full metaphysical account of how the elements can compose into a complex that is partless, but he nevertheless charts sophisticated pathways towards its explication. Holism is one such metaphysical pathway, which however he does not fully explore.

Fusion: The third conception of oneness we find in Plato is oneness by fusion. Let us begin by contrasting *fit* and *fusion*, by means of two cases from everyday experience: for fit, a wall built out of bricks; for fusion, a pool of water resulting from merging droplets of rain. While the bricks fitted together still remain numerically discrete in the wall, the droplets lose their discreteness in the pool of water. The pool illustrates a type of whole whose components, the droplets, are no longer

numerically individuated when part of the whole. Recall now the assumption made (p. 90) in investigating Plato's position here, that when the whole is partless and indivisible into parts (ἀμερές and ἀμέριστον), the elements making it up must cease to be numerically discrete in the whole; thus, the requisite type of mereological composition must eliminate the numerical discreteness of the elements.

Perhaps unsurprisingly to the reader, we find in Anaxagoras (albeit implicit, or merely assumed, but untheorized) the model of mereological composition that meets Plato's requirements. I argued in chapter 1 that Anaxagoras assumes that what we call a 'type of property' is the total quantity of the property's shares in the universe (e.g., the Hot; see section 2.7 of chapter 2). This stance enables Anaxagoras to hold that the Opposites—understood as types—acquire and lose parts without being changed by these operations (in line with Parmenides' veto of change). The Opposites are open sets (or regions) of the physical shares of the Opposites dispersed throughout the universe. Open sets need not increase, decrease, or suffer change when parts are shuffled (assuming that neither the quantity, nor the structure of an open set contribute the set's identity, but only the kind; e.g., red).¹⁹ I submit that this is the account of parts and wholes that Plato describes in an important passage from the *Symposium*, where he writes,

[. . .] but [the Form of Beauty] itself by itself, with itself, it is always one in form; and all the other beautiful things share in that, in such a way that when those others come to be or pass away, this does not become the least bit smaller or greater nor suffer any change. (211b1–5)

[. . .] αὐτὸ καθ' αὐτὸ μεθ' αὐτοῦ μονοειδὲς αἰεὶ ὄν, τὰ δὲ ἄλλα πάντα καλὰ ἐκείνου μετέχοντα τρόπον τινὰ τοιοῦτον, οἷον γιγνομένων τε τῶν ἄλλων καὶ ἀπολλυμένων μηδὲν ἐκεῖνο μήτε τι πλέον μήτε ἔλαττον γίγνεσθαι μηδὲ πάσχειν μηδέν.

When objects in the world partake—or cease partaking—of a Form (by gaining or losing a part of it), one might expect that this would

¹⁹ In the case of Anaxagoras's Opposites, the structure of each Opposite changes on account of movement of the parts caused by the cosmic vortex.

bring about changes in the partaken Form. However, Plato claims in the passage above that the Form ‘does not become the least bit smaller or greater, nor suffer any change’.

What Plato is describing here is an individual whose criterion of individuality is only its kind; same kind, same individual. This is stuff-arithmetic, following mass-term logic, which Plato captures succinctly in the example of gold given in the *Protagoras* (and cited here also at p. 91: ‘Do you mean parts [...] as in the parts of gold [...] where there is no difference, except for size, between parts or between the parts and the whole?’ 329d6–8). Gold does not change, if partitioned into gold ingots. Plato tells us in the *Symposium* quotation above that this is also the case with Forms: like stuff, Forms, which are ‘always one in form’ (μονοειδὲς αἰ), do not change, when partitioned. Their individuation criterion stays the same even if they are divided into parts.²⁰ This is the arithmetic that governs a *logical fusion*. In a logical fusion of a number of individuals, the fusion is a single individual, and the individuality of its individual components does not matter; e.g., the logical fusion of spoons is a single individual. (We are here considering the fusion, not only of present spoons, but of all spoons, including past and future ones, as an invariable individual, since Forms are invariable.) I submit that Plato conceives of the Form of Beauty, and Forms, generally, as the logical fusion of the parts of the Form (whether in sensible objects or not). So a Form does not ‘suffer any change’ by being partaken. It is in this sense that the parts of a Form are *Cambridge parts*, where partitioning (by partaking) does not change the Form, which is their fusion.

We want however to consider the question of whether it is a difficulty for this interpretation that Plato’s Forms are transcendent (as we saw in section 3.4 of chapter 3). In what sense are a transcendent Form *and* its physically distributed parts (in the sensible world) a logical fusion? It has to be acknowledged that conceiving of the shares of Anaxagoras’s Opposites as an open set is much more straightforward, because Anaxagoras’s parts of Opposites and their totality are all in the

²⁰ The notion stems from Anaxagoras’s Opposites, where the quantity of a kind (e.g., Hot) in the world remains the same, while its distribution in the world changes, without affecting any change in the kind.

physical world. I argue, however, that Plato's Forms can be conceived as logical fusions, for the following reason: recall the *Self-Predication Principle* discussed at various points in chapter 4. According to this principle, the Forms are qualified by the properties they stand for, which their parts 'transmit' to partakers. This is all a Form is and does, and this is why we can think of a Platonic Form as a logical fusion of *all* its instances, including both the transcendent and the physical ones—all of them are *f*. The fusion is of is of metaphysical parts, i.e., qualitative aspects of instances of Forms in the case of Plato. As fusions, the Forms are not affected by being partaken.²¹

A conceptual conundrum may be raised at this point, as to whether the fusion of different qualities (in abstraction), which *qua* fusion is partless, is also *monoeides* or not. If we suppose that the only ground of parthood, here, is qualitative difference, then when we fuse the *parts* together does any *difference* remain? Alternatively, if the only parts there are, are individuated by their qualitative difference from other parts, what does it mean that we 'fuse' the parts together? This is the challenge raised and address with Account 3. On the one hand, the Form of Duality/Two-ness needs to qualify its partakes with plurality; but on the other, *qua* Form, it is *monoeides*. This conundrum needs to be resolved, because it problematizes all Forms that embody a structural complexity, and hence qualitative variation, e.g., Duality/Two-ness, Equality/the Equals, etc. Can qualitative variation be *monoeides*?

I believe that Plato assumes that a fused complex of different qualities is not qualitatively articulated into qualitative parts. Let me put this a different way—what is the difference between the Form of Two-ness and the Form of Duality, or the Form of the Equals and the Form of Equality? Neither the Form of Two (as a perfect paradigm), nor the Form of the Equals (as a perfect paradigm) are *monoeides*, because they are plural. I have argued that Plato introduces (interchangeably)

²¹ The reader might wonder whether an alternative understanding of the complexity of Forms that would meet Plato's requirements might be in term of (what we call) sets or classes. On this interpretation, the parts of a Form in the sensible objects would be related to the Form, as members relate to the set of which they are members. The members of a set here would need to be understood diachronically, across time. My objection to such a reading of the Forms would be that members of sets are discrete, as are the subsets of sets, while Forms are indivisible and partless. For this reason, fusions seem to suit best the ontology of Forms.

further ‘variants’ of these Forms, i.e., Duality and Equality, as the respective *monoeides* variants of these properties. These variants are *homoeomeric*, so that any objects that partake of Duality or of Equality will be qualified in the very same way as any other objects partaking of them, namely, as two or as equal. If Duality or Equality were articulated qualitatively, then partaking of different parts of these Forms would qualify partakers differently, which is undesirable in Plato’s theory.²² Hence, I believe that Plato assumes that Duality and Equality are intrinsically *monoeides*. I have argued that the only metaphysical account that gives rise to a *monoeides* out of a complex whole of parts (e.g., of the Two, or of the Equals) is Account 3, which is best understood as composition by fusion; e.g., the Equals render *monoeides* Equality, by *qualitative fusion*. When in Account 3 Plato says that the Form that unifies a complex whole is partless (μία τις ἰδέα ἀμέριστος), he takes that Form to be partless and *monoeides* (μονοειδές τε καὶ ἀμέριστον) so that its partakers are similarly qualified. Hence the conundrum I raise here the Form of Twoness, of the Equals, etc., need to be *monoeides* and entail variation. I argue that even qualitative variation becomes *monoeides*, when fused, as per (on my interpretation of) Account 3. I do not mean that it becomes *monoeides* in the sense in which mixing white and black delivers grey, but in the sense in which a polka-dot pattern is *monoeides*—this is the sense in which Forms of Duality or Equality are *monoeides*.

I claim that in Account 3, Plato assumes that no qualitative articulation remains in the single partless Form that is constituted from its components. He tells us that the components of a complex make up a whole which is unified by a single Form that is partless, and thereby rendered *monoeides* (see pp. 88–9 for the fuller text):

S: So according to what you are saying now, Theaetetus, a complex would be some *absolutely single kind of thing, not divisible into parts*.

²² The Forms and their parts ‘embody’ the properties that their partakers become qualified with. If the parts of a Form ‘embody’ different properties (i.e., the Form is not a *homoeomer*, and hence, not *monoeides*), then the parts of that Form will qualify the partakers of the Form with different properties, whereas the theory of Forms assumes that when different partakers partake of the same Form, they are similar (as per the *One Over Many Principle*).

T: Apparently.

[...]

S: And wasn't the reason²³ precisely its being *single in form* [*monoeides*] and not divisible into parts? Because I can't see any other.

T: No, there doesn't seem to be any other. (205c1–d2, my emphasis)

Σ. ὦ Θεαίτητε, κατὰ τὸν νῦν λόγον μία τις ἰδέα ἀμέριστος συλλαβὴ ἂν εἴη.

Θ. ἔοικεν.

[...]

Σ. ἢ οὖν ἄλλη τις ἢ αὕτη ἢ αἰτία τοῦ μονοειδέος τε καὶ ἀμέριστον αὐτὸ εἶναι; ἐγὼ μὲν γὰρ οὐχ ὁρῶ ἄλλην.

Θ. οὐ γὰρ οὖν δὴ φαίνεται.

A complex is unified by a Form into a whole that somehow retains the complexity (in the way that a syllable does) but becomes *monoeides* (as a Form is). To return to our earlier example, if polka-dot can be conceived of as a uniform pattern, so can Twoness and the Equals be conceived of as *monoeides* Duality and Equality, while still being capable to qualify partakes with variation.

Returning now to the more general framework within which we are examining these issues, on my interpretation, Account 3 of composition in the *Theaetetus's Dilemma* is apt to describe parts-whole relations within Plato's Forms; whilst Account 1 applies to parts-whole relations within objects in the sensible world; and Account 2 is an exploration of logical space. I have given much attention to Account 3, because it delivers an account of a complex as incomposite, partless, and one, which uniquely explains the metaphysical complexity of Forms. Plato does not make this explanatory connection explicit, but, as we saw, the terminology he uses in the *Dilemma* is the terminology with which he describes explicitly elsewhere the Forms. Thus, it is more than plausible that the account of mereological composition he gives here is applicable to the Forms.

²³ Namely, 'because each of them, when taken by itself, is not composite' (διότι αὐτὸ καθ' αὐτὸ ἕκαστον εἴη ἀσύνθετον (205c5–6).

One final remark before concluding this section. We noted at the beginning that Plato introduces the *Dilemma* in discussing an epistemological problem (at 201d–210a), namely, whether a composite and its elements are equally knowable or not, and he concludes that they are (namely, either they are both knowable, or neither is; see 205d–e). Account 3 of composition, which I argue does serve to underpin the metaphysical complexity of the Forms, does not serve the purposes of Plato's overall epistemological argument for which he develops the *Dilemma*. So, *in this context*, Plato rejects the type of composition proposed in Account 3, as an inadequate account of the ontology of physical complexes which could justify our knowledge of the complexes. Instead, he commits himself to Account 1, to explain our knowledge of complexes:

S: So if we may argue from the elements and complexes that we're familiar with ourselves [e.g., from the case of the letters and the syllable] to the rest [e.g., the case of a lyre], we'll say that the class of elements [e.g., the letters] admits of knowledge that is far clearer, and more important for the perfect grasp of every branch of learning, than the complex [e.g., the syllables]; and if anyone says that it's in the nature of a complex [e.g., the syllable] to be knowable and of an element [letter] to be unknowable, we'll take him to be making a joke, whether on purpose or not. (206b4–9)

Σ. ὥν μὲν ἄρ' αὐτοὶ ἔμπειροὶ ἔσμεν στοιχείων καὶ συλλαβῶν, εἰ δεῖ ἀπὸ τούτων τεκμαίρεσθαι καὶ εἰς τὰ ἄλλα, πολὺ τὸ τῶν στοιχείων γένος ἐναργεστέραν τε τὴν γνώσιν ἔχειν φήσομεν καὶ κυριωτέραν τῆς συλλαβῆς πρὸς τὸ λαβεῖν τελέως ἕκαστον μάθημα, καὶ ἐάν τις φῇ συλλαβὴν μὲν γνωστόν, ἄγνωστον δὲ πεφυκέναι στοιχείον, ἐκόντα ἢ ἄκοντα παίζειν ἡγησόμεθ' αὐτόν.

At the end of the *Dilemma* (205d8–206c1) Plato argues that a complex is identical to its parts, and thereby rejects that a complex is an indivisible and partless whole.

A final point before concluding the examination of Account 3. Plato holds that, by the type of composition Account 3 introduces, a complex resulting from parts is partless (205c2). Further, he seems to think

that, by this type of composition, the resulting partless complex becomes like an element (205d4–6). Is this a problem, if Plato's position is intended to generalize to all Forms, including such Forms as the Form of Duality/Twoness. I submit that this does not raise a problem for Plato, because the only requirement for primary elements of composites, here (at 205c5–6), is that 'each of them, when taken by itself, is not composite' (ἄσύνθετον). The Forms, we learn from Account 3, are indivisible, and hence, not composite (205c1–2).

5.3. Being *monoeides* versus being a *homoeomer*

In this section I will investigate two crucially important features that Plato attributes to the Forms (the first, explicitly in the text, and the latter by implication from his other metaphysical commitments), concerning the general issue of the Forms' metaphysical complexity. Plato's Forms are *monoeides* and *homoeomers*. The question I want to start with, in general terms, is this: how does being a *homoeomer* differ, metaphysically, from being *monoeides*?

Plato never defines what being *monoeides* stands for in his system, treating the term as self-explanatory. On a *prima facie* plausible, literal understanding of the term, one would take it to mean (as applied, e.g., to the Forms) that each Form has only one property; but this cannot be right, because each Form has many properties (many of which we encountered in passages quoted in the preceding chapters). The *Contagion Principle* (see section 1.4 of chapter 1 and elsewhere) gives us a lead for understanding what it is for Plato's Forms to be *monoeides*. What the *Principle* makes metaphysically salient, of relevance to us here, is that each Form, even if possessing many properties, 'transmits' only one property. For instance, the Form of Heat possesses the properties of being unitary, incomposite, eternal, etc.; but it does not transmit these properties to the partaking objects; it transmits only the property of being hot. So how are the properties of being hot on the one hand, and of being unitary, incomposite, eternal, etc., on the other, related to the Form of Heat? Is there a metaphysical difference, and which? How can it be expressed (given that Plato does not conceptualize it explicitly

anywhere)? I submit we can make progress on these questions by means of a metaphysical distinction subsequently drawn by Aristotle between *essential* and *necessary* properties—which Plato did not have. In a nutshell, the essence *is* the object itself,²⁴ while the necessary properties *belong* to the object—to the instantiated essence, as their subject. Using the distinction between essential and necessary properties, we can think of Plato's Form of, e.g., Heat as being essentially hot, but only necessarily unitary and eternal. Had Plato this distinction in his metaphysics, he would have been able to stipulate that, by definition, Forms can 'transmit' only the essential property that constitutes each one of them, but not their necessary properties. This is in fact what Forms do, in Plato's metaphysics: a Form F transmits only one type of property, *f*-ness, to the objects that partake in it. The explanation that we can then supply is: since the only type of property the Form can 'transmit' is also the property that defines what each Form is, *f*-ness is (in Aristotelian terms) the *essence* of the Form; namely, *f*-ness is *what it is to be* the Form F (e.g., the Form of Heat). It is this single (transmissible) property, for each Form, that makes the Form be the Form it is. So, I am suggesting that being *monoeides*, each Form is *essentially* one property—the one property that it can 'transmit'—and that it is this property *differently* than the other properties that qualify the Form, because this property determines what the Form is.

What is the relation between being *monoeides* and being a *homoeomer*? We saw that Plato mentions being *monoeides*, being indivisible, and being partless as if in one breath in the *Theaetetus* (205d2–6; see p. 88), although he does not derive the one from the other and does not explain the connections between them. In discussing Account 3 we came to the conclusion that the Forms are *monoeides* in the sense of being *partless*, but need not thereby also be *uncomposed*. (Structural Forms are *monoeides* but composed of structures.) The question for us is: Can Plato consistently hold that a Form is *monoeides* and also a *homoeomer*? I submit he can, even though a *monoeides* entity has no

²⁴ With Aristotelian hindsight, we can understand being *monoeides* as being *kath'auto* in Aristotle's sense, according to which something is *kath'auto*, not when it is simply necessary, but when it is said to be such in itself: 'The essence of each thing is that which it is said to be per se' (*Metaphysics* 1029b14–5).

parts. Let us consider a Form, which we assume is *monoeides*, even in the cases where it has been composed of a structure, e.g., the Form of Duality that is a composition of the Two, or the Form of Equality that is a composition of the Equals. Such *monoeides* entities are essentially of one kind, uniformly. Does this make them *homoeomers*? To be a *homoeomer*, an entity need not have discrete parts; even if it has Cambridge parts, if they are essentially of the same kind as the whole, the entity is a *homoeomer*. Since a *monoeides* entity is, uniformly, essentially of a single kind, all its Cambridge parts are of the same kind as the whole, and so it is a *homoeomer*.²⁵

Are the Forms metaphysically complex and yet unified in the sense in which Aristotle's hylomorphic compounds are? To further enrich this discussion and clarify Plato's thought, it will be useful to compare Plato's Forms *qua monoeides* entities to Aristotle's hylomorphic entities (which are *par excellence* unities in his system), and understand their metaphysical difference (or similarity). This comparison requires a premise: there are two main interpretations of Aristotle's account of the unity of an hylomorphic compound. I differentiated them in (2013) thus, as:

1. *Mereological Hylomorphism*: on this interpretation the hylomorphic whole is a mereological composite of matter and form, which are extensional *parts* of the whole;
2. *Non-Mereological Hylomorphism*: on this interpretation the hylomorphic whole is *partless*, unified as something one and continuous, with the material parts that composed the whole integrated into the whole by the form.

In Marmodoro (2013), I argued that Aristotle's substances are non-mereological hylomorphic compounds; here I argue that Plato's Forms are (*mutatis mutandis*) also non-mereological compounds. Plato's *monoeides* entities, according to Account 3 (as per section 5.2), are partless, unified into one and continuous complexes that have been

²⁵ If a Form were per hypothesis discretely structured, e.g., the Form of Two, or of the Equals, etc., and not *monoeides*, then its parts would *not* be of the same kind as the whole Form.

composed out of parts, just as Aristotle's hylomorphic compounds are. But whereas Aristotle's composites are unified by *holism*, Plato's composites are unified by *fusion*.

5.4. Platonic hylomorphism

Following on the discussion in the previous section as to whether Plato's Forms are metaphysically complex in the sense in which Aristotle's hylomorphic compounds are (i.e., as non-mereological compounds), I will here argue that Plato pioneers in his theory of Forms a metaphysical approach to composition that sets out some of the key principles of hylomorphic composition, which Aristotle shares, even if Plato's ultimate position differs from that of Aristotle; I will call it *Platonic hylomorphism*.

Aristotle's hylomorphism is broadly assumed to be an early version (or even the earliest version in the history of philosophy) of what we nowadays called *functionalism*, following Nussbaum's and Putnam's (1992) seminal interpretation.²⁶ Briefly put, the thrust of this interpretation is that the substantial form that serves as the principle of organization and unity of a substance is the function that identifies the substance for what it is.²⁷ I do not discuss this interpretation here, since functionalism in general, and functionalism as an interpretation of Aristotle's hylomorphism in particular, have received more than their fair due in the literature in the past few decades. Here I am interested in a different issue; I claim that, in addition to this type of hylomorphism, Aristotle develops another type of hylomorphism, based on his metaphysics of *mixture*. (I further claim that Plato conceives of a third type of hylomorphic composition, which I call *Platonic hylomorphism*.)

²⁶ M. C. Nussbaum and H. Putnam, 'Changing Aristotle's Mind', in M. C. Nussbaum and A. Oksenberg Rorty (Eds.), *Essays on Aristotle's De Anima*, Clarendon Press, 1992, 27–56.

²⁷ On the functional interpretation of Aristotle's hylomorphism, the function may be either external to the hylomorphic compound (e.g., the value of money), or intrinsic to it. The latter can be broadly conceived as comprising holistically connected activities such as those sustaining the life of organisms, which have no further goal to fulfil than themselves.

Aristotle's second type of hylomorphism is to be found in his account of mixtures. He holds that organic parts of living beings are composed of stuffs that are *homoeomers*; in the *Parts of Animals* he talks of 'a second degree of composition' which is 'that by which the nature of the homogeneous parts of animals, such as bone, flesh, and the like, are constituted out of the primary elements' (Δευτέρα δὲ σύστασις ἐκ τῶν πρώτων ἢ τῶν ὁμοιομερῶν φύσις ἐν τοῖς ζώοις ἐστίν, οἷον ὁστοῦ καὶ σαρκὸς καὶ τῶν ἄλλων τῶν τοιούτων. 646a20–2, translation slightly modified).²⁸ So, generalizing from the example, it is clear that Aristotle thinks that there is a process of generation by which the primary elements (water, earth, fire, and air) composed into stuffs which are *homoeomers* (whose parts therefore are no longer the primary elements, but rather of the same kind as the whole). I will argue that the stuffs resulting from this process are hylomorphic compounds, showing that the initial elements survive in the resulting stuffs, only that they survive it in a very special state.²⁹

We know from Aristotle's theory of substance that the matter of a hylomorphic compound, organized by the form, *constitutes* a compound which is of a different kind than its matter. Flesh as constituted by water, earth, fire, and air, is an example of this. Hence, one would reasonably conclude that at bottom, i.e., at the composite's ground-level constituent matter, the composite would *not* be the same kind as the whole. Such an expectation seems to be confirmed by Aristotle himself, who writes in the *Metaphysics* that, e.g., water is the matter of vinegar (1045a2). I argue against this expectation. How are we then to understand this type of composition, and what happens to the elements when constituting the compound? To answer these questions, we need to look at Aristotle's account of mixtures in the *De Generatione et Corruptione*. In explaining how mixing takes place in nature, Aristotle appears to be impressed by the fact that, at least in some cases, the elements dissolve in the mixture, and yet subsequently these very elements re-emerge from the mixture. Salt in water would have been a prominent such case for him: salt 'vanishes' when mixed with water, but re-emerges when the water evaporates. How does this happen?

²⁸ This passage is quoted within its larger context later, at p. 101.

²⁹ Relevant here is Krizan (2013), on the structure of Aristotle's elements.

Aristotle develops a metaphysically unique account of mixtures, which can explain the case of the re-emergence of the elements or ingredients.³⁰ He writes that,

Now, as we maintain, some things are such as to act and others such as to suffer action from them. Moreover, some things—viz. those which have the same matter—reciprocate, i.e., are such as to act upon one another and to suffer action from one another [...]. (328a18–21)

Ἔστι δὴ, ὡς ἔφαμεν, τῶν ὄντων τὰ μὲν ποιητικά τὰ δ' ὑπὸ τούτων παθητικά. Τὰ μὲν οὖν ἀντιστρέφει, ὅσων ἡ αὐτὴ ὕλη ἐστί, καὶ ποιητικά ἀλλήλων καὶ παθητικά ὑπ' ἀλλήλων. [...]

The notion of reciprocation is significant, firstly, to understand what happens to the nature of the mixants, but secondly, to understand the mechanism of mixing which gives rise to a *homoeomer*. What is it that 'acts', 'suffers', 'reciprocates', as per Aristotle's expressions just quoted? Of course, it is the mixant; but the 'mechanism' that makes all this possible are the powers that constitute each mixant. For Aristotle, all things in nature are constituted by the four elements (fire, air, water, earth), and the four elements are constituted by the primary powers (hot, cold, wet, dry). Hence, everything in nature is made up of combinations of the primary powers, which are the ultimate agents of action, suffering, and generally reciprocating effects.³¹ Aristotle continues, in the same passage as just quoted:

³⁰ I draw here on Scaltsas's (2009) account of Aristotelian mixtures. See also Krizan (2018), on homoeomers as mixtures of *dynamis* (powers), not elements, as Scaltsas (2009) argues.

³¹ In the *De Generatione et Corruptione* Aristotle states that at this fundamental level of reality there are properties and bodies (330b6–7). In thinking about the properties that characterize the primary bodies, Aristotle narrows down the candidates for this role of fundamental property to the tangible contraries (329b6–9), which for him are: '[Properties . . .] capable of acting [and] being affected [. . .] said of things in virtue of their acting upon something else or being acted upon by something else' ([. . .] ποιητικά [. . .] παθητικά. [. . .] τῷ ποιεῖν τι ἕτερον ἢ πάσχειν ὑφ' ἑτέρου λέγονται. 329b21–2). These properties are causal powers: they are properties whose nature is to bring about or allow their bearer to suffer change. Aristotle proceeds by going through an analysis of the list of tangible contraries, and concludes that they are all reducible to four primary or fundamental ones. These primary powers are heat, cold, wetness, and dryness (330a24–9). They pair up and constitute the four elements, namely fire, air, water, and earth (330b3–5). The simple elements can combine between them in different proportions to

On the other hand, when there is a certain equilibrium [/equality] between their powers, then each of them [i.e., each mixant] changes out of its own nature towards the [nature of the] dominant: yet neither becomes the other, but both become an intermediate with properties common to both. (328a28–31)

Ὅταν δὲ ταῖς δυνάμεσιν ἰσάζῃ πως, τότε μεταβάλλει μὲν ἑκάτερον εἰς τὸ κρατοῦν ἐκ τῆς αὐτοῦ φύσεως, οὐ γίνεται δὲ θάτερον, ἀλλὰ μεταξὺ καὶ κοινόν.

Let us take a very simple case of primary powers: if an instance of the power of heat interacts with an instance of the power of coldness, they will reach a common neutral point, where neither is stronger than the other—let us call this state lukewarm. Then, the final state of each, after the interaction, is identical to the final state of the other, because they have ‘compromised’ each other until they have reached equal strength (see preceding quote: ἰσάζῃ πως). Now, keeping the case simple, let us imagine two clusters of opposite powers interacting, until the constituent powers compromise each other to the point of equality. Then, the two clusters will have the same nature, in so far as they are each composed of equalized powers. This is how Aristotle thinks of the mixants in a mixture. Since each mixant is composed of hot, cold, wet, and dry, they interact with one another until their respective powers equalize their opposites. At that point, the natures of the mixants have become the same, by compromising each other’s nature: ‘both become an intermediate, with properties common to both,’ as per the preceding quote. This is how I understand Aristotle’s account of mixtures, as grounded on his power ontology. Aristotle is explicit about power mixtures, e.g., in the *Parts of Animals*:

Now there are three degrees of composition; and of these, the first in order, as all will allow, is composition out of what some call the elements, such as earth, air, water, fire. Perhaps, however, it would be more

make up more complex kinds of stuff. Thus the (instantiated) primary powers are the primitive (or basic) and fundamental building blocks of reality.

accurate to say composition out of the primary powers [. . .]. For wet and dry, hot and cold, form the material of all composite bodies [. . .]. The second degree of composition is that by which the homogeneous parts of animals, such as bone, flesh and the like, are constituted out of the primary elements. The third and last stage is the composition which forms the heterogeneous parts, such as face, hand, and the rest. (646a20–4 translation slightly modified, my emphasis)

Τριῶν δ' οὐσῶν τῶν συνθέσεων πρώτην μὲν ἂν τις θείη τὴν ἐκ τῶν καλουμένων ὑπὸ τινων στοιχείων, οἷον γῆς ἀέρος ὕδατος πυρός. Ἔτι δὲ βέλτιον ἴσως ἐκ τῶν δυνάμεων λέγειν. [. . .] Ὑγρὸν γὰρ καὶ ξηρὸν καὶ θερμὸν καὶ ψυχρὸν ὕλη τῶν συνθέτων σωμάτων ἐστίν. [. . .] Δευτέρα δὲ σύστασις ἐκ τῶν πρώτων ἢ τῶν ὁμοιομερῶν φύσις ἐν τοῖς ζώοις ἐστίν, οἷον ὀστοῦ καὶ σαρκὸς καὶ τῶν ἄλλων τῶν τοιούτων. Τρίτη δὲ καὶ τελευταία κατ' ἀριθμὸν ἢ τῶν ἀνομοιομερῶν, οἷον προσώπου καὶ χειρὸς καὶ τῶν τοιούτων μορίων.

In this passage, Aristotle offers, summarily, his power-based account of mixtures, which, I submit, is the fundamental ‘mechanism’ for constituting *homoeomers*, such as flesh and bones.³² In the common, intermediate state, the natures of the ingredients have ‘equalized’ and the mixture has become *homoeomers*, as we read in the *Generation and Corruption*:

But we maintain that, if combination has taken place, the compound *must* be homogeneous—any part of such a compound is the same as the whole, just as any part of water is water. (328a10–2 translation slightly modified)

³² I should add that I do not consider Aristotle’s account philosophically satisfactory, or at least, complete, because he has not told us what the role of the *arrangements* of powers is, in each mixant, and how that alters the causal profile of each mixant’s powers. I will not pursue this issue further here, but only mention that this is critical, both for understanding the effect of *structure* on the powerfulness of each ingredient; and to understand how it is that the arrangement of powers, in each ingredient, is not lost in the process of mixing and equalizing, but is somehow capable to be preserved, or restored when the ingredients are recovered from the mixture.

Φαμὲν δ', εἴπερ δεῖ μεμῖχθαι τι, τὸ μῖχθ' ὁμοιομερὲς εἶναι, καὶ ὥσπερ τοῦ ὕδατος τὸ μέρος ὕδωρ, οὕτω καὶ τοῦ κραθέντος.

It is crucial for my thesis that in Aristotle's account of mixture, the initial ingredients are recoverable. In the *De Generatione et Corruptione* he does provide an account of the recovery 'mechanism':

Since, however, some things are potentially while others are actually, the constituents can be in a sense and yet not-be. The compound [mixture] may be actually other than the constituents [mixants] from which it has resulted [hence, hylomorphic constitution]; nevertheless each of them may still be potentially what it was before they were combined, and both of them may survive undestroyed. (327b22–6)

Ἐπεὶ δ' ἔστι τὰ μὲν δυνάμει τὰ δ' ἐνεργείᾳ τῶν ὄντων, ἐνδέχεται τὰ μῖχθέντα εἶναι πως καὶ μὴ εἶναι, ἐνεργείᾳ μὲν ἑτέρου ὄντος τοῦ γεγονότος ἐξ αὐτῶν, δυνάμει δ' ἔτι ἑκατέρου ἅπερ ἦσαν πρὶν μῖχθῆναι, καὶ οὐκ ἀπολωλότα.

Let us take again the case of seawater. The salt can be recovered from its mixture with water, which is explained by Aristotle by the salt's having persisted in potentiality throughout the existence of the mixture. The salt in seawater is in a 'compromised' state, but it is 'potentially what it was before they [salt and water] were combined', namely, while in seawater, it is 'potentially salt'.³³ That the mixants compromise each other's

³³ Let us now return to vinegar. Consider now the following contrast: If we divide a table into physical parts, the table-parts we thus generate are wood, not table; the parts of wood constitute the table hylomorphically. By contrast, if we divide seawater into physical parts, the seawater-parts we thus generate are seawater, all the way down for Aristotle. This is what makes mixtures an untypical hylomorphic composite: the components that *constitute* seawater, namely, salt and water, constitute it being in potentiality in the mixture, as opposed to the wood of the wooden table. We can now understand the sense in which water is the matter of vinegar, in Aristotle's passage from the *Metaphysics* quoted earlier (1045a6); and in other cases, such as water being the matter of bone, of flesh, etc. Vinegar does not divide into water in the way a table divides into wood. Water is a constituent of vinegar, but it exists in it in potentiality only. When the mutual compromise of the elements in the vinegar mixture somehow weakens, this allows the elements that were in potentiality in the mixture, constituting the vinegar, to re-emerge, as, e.g., water does, when vinegar deteriorates (as far as Aristotle would have thought of it).

natures makes the mixture a *homoeomer*; that the mixants persist in potentiality makes the mixture *hylomorphic*. My argument is that seawater is both a *homoeomer* and a hylomorphic compound. This is a second type of hylomorphism, which Aristotle develops in his system, which has evaded attention in the scholarship.

I submit that Plato's Account 3 of the *Dilemma of Composition* in the *Theaetetus* gives us the elements to develop, more fully than Plato did, a third type of hylomorphic composition, which I call *Platonic hylomorphism*, different from Aristotle's two kinds briefly introduced so far. Recall that we saw in Account 3 that the elements that make up a complex 'vanish' into partlessness in the complex:

S: Well then, let's suppose it's as we're saying now: a complex is one kind of thing [μία ιδέα] which comes into being out of each set of elements that fit together [συναρμοσπόντων], and that goes for letters and everything else alike.

T: Yes.

S: In that case, it mustn't have parts. (204a1–5)

Σ. ἐχέτω δὴ ὡς νῦν φαμεν, μία ιδέα ἐξ ἐκάστων τῶν συναρμοσπόντων στοιχείων γιγνομένη ἢ συλλαβή, ὁμοίως ἔν τε γράμμασι καὶ ἐν τοῖς ἄλλοις ἅπασιν.

Θ. πάνυ μὲν οὖν.

Σ. οὐκοῦν μέρη αὐτῆς οὐ δεῖ εἶναι.

I argued in section 5.2 that we should understand this type of composition as a fusion of parts, which becomes partless. I see this model of hylomorphism, namely *Platonic hylomorphism*, as complementing Aristotle's second type of hylomorphism derived from his theory of mixtures. On the latter model, there is physical interaction between the elements making up the complex, resulting in the complex having, through-and-through, one nature, such that it becomes a *homoeomer*, with all the parts being of the same kind as the whole, e.g., bone, or flesh. On the model of *Platonic hylomorphism*, the logical fusion of the parts gives rise to a partless complex whole, e.g., number 6. It is as if Plato is introducing a type of metaphysical (rather than physical, as on Aristotle's mixture model) interaction between the elements of a

complex, e.g., between the parts/elements/units of number 6, which *fuse* into that partless number. How this is achieved is however left undeveloped in Plato's work.³⁴

5.5. Composite by becoming: the *Third Man Argument*

We already engaged several times with the *Contagion Principle* in the preceding chapters, which captures a general way of thinking about causation in antiquity. We noted that Plato's theory of Forms assumes this principle, and that examining it and its role in Plato's theory gives us a deeper understanding of certain features of the theory. I will here argue that the *Contagion Principle* generates a fundamental problem for the theory of Forms, of which Plato becomes aware in the course of the development of his metaphysics: if the *Contagion Principle* applies to all there is, it entails that the Forms, too, as qualified each by the property they stand for, have been 'infected' by a source, thereby *becoming what they are*; but becoming entails partaking, and hence a type of composition; thus the Forms are in some sense composed-by-becoming. This is what Plato's most celebrated and most debated *Third Man Argument* (TMA) in the *Parmenides* (132a–b) reveals: that each Form *F* is *f* by partaking in the Form of *f*-ness. In what follows, I will examine the relation of the *Contagion Principle* to the theory of Forms, proposing a novel way of understanding the TMA and how Plato responds to it. I will show that after gaining understanding of how the *Contagion Principle* impacts on the theory of Forms, Plato will reformulate the theory in a way that restricts the applicability of the *Contagion Principle*, precisely to avoid the difficulties the principle generates, and block the TMA regress. (This solution will be introduced in section 7.2 of chapter 7.)

We saw (in section 1.4 of chapter 1) that the *Contagion Principle* explains the cause of the qualitative state of an object, by tracing it back

³⁴ It has conceptual connections with Aristotle's theory of substance, and in particular the holistic operation of substantial form on the substance's constituents, which however I will not undertake to explore here.

to the ultimate source from which the object acquired that condition. The reasoning runs as follows, revealing the problems the *Contagion Principle* gives rise to:

- (1) There are *f*-objects.
- (2) There is an ultimate and unique source *S* for each object's *f*-ness.
- (3) Source *S* passes on the condition of *f*-ness to each object it 'contaminates'.

It follows that,

- (4) Source *S* possesses the condition of *f*-ness, being *f*.
- (5) The ultimate source *S* of *f*-ness is different from the *f*-objects it contaminates with *f*-ness.
- (6) Acquiring the condition of *f*-ness from the ultimate source *S* of *f*-ness makes an object *f*-similar to other *f*-objects.

Translating this into the ontology of the theory of Forms, the reasoning becomes this:

- (1) There are *f*-objects.
- (2) There is a *unique* Form *F* for each type of *f*-ness.
- (3) Form *F* passes on its qualitative condition of *f*-ness to each object that *partakes* of the Form.

It follows that,

- (4) Form *F* *possesses* the condition of *f*-ness, being *f*.
- (5) Form *F* is *different* from the *f*-objects that participate in it.
- (6) Acquiring the condition of *f*-ness from Form *F* makes an object *f*-similar to other *f*-objects.

Turning to Plato's *Parmenides*, we find that,

[. . .] there are certain forms from which these other things, by getting a share of them, derive their names—as, for instance, they come to be like by getting a share of likeness, large by getting a share of largeness, and just and beautiful by getting a share of justice and beauty? (130e5–131a2)

εἶναι εἶδη ἅττα, ὧν τάδε τὰ ἄλλα μεταλαμβάνοντα τὰς ἐπωνυμίας αὐτῶν ἴσχειν, οἷον ὁμοιότητος μὲν μεταλαμβάνοντα ὅμοια, μεγέθους δὲ μεγάλα, κάλλους δὲ καὶ δικαιοσύνης δίκαιά τε καὶ καλὰ γίγνεσθαι;

So (1): there are *f*-things in the world (e.g., beautiful things, large things, things that are alike, etc.); and (3): things become *f* by partaking in Form *F* (e.g., partaking in the Form of Beauty makes things beautiful, in the Form of Largeness large, in the Form of Likeness alike, etc.). Plato further writes,

I suppose you think each form is one on the following ground: whenever some number of things seem to you to be large, perhaps there seems to be some one character, the same as you look at them all, and from that you conclude that the large is one. (132a1–4)

Οἶμαι σε ἐκ τοῦ τοιοῦδε ἓν ἕκαστον εἶδος οἶεσθαι εἶναι· ὅταν πόλλ' ἅττα μεγάλα σοι δόξη εἶναι, μία τις ἴσως δοκεῖ ἰδέα ἢ αὐτὴ εἶναι ἐπὶ πάντα ἰδόντι, ὅθεν ἓν τὸ μέγα ἡγῆ εἶναι.

So (2): for each type of *f*-ness there is a unique Form *F*. Furthermore, (6): for any set of *f*-similar things, there is a unique Form *F* whose qualitative condition of *f*-ness they all share. However, we further learn that,

‘[. . .] If you look at largeness and these many large things in the same way with the mind's eye, again, won't some one thing appear large by which all these appear large?’ ‘That is true,’ he said. (132a6–8)

[. . .] ἐὰν ὡσαύτως τῇ ψυχῇ ἐπὶ πάντα ἴδῃς, οὐχὶ ἓν τι αὐτὸ μέγα φανεῖται, ᾧ ταῦτα πάντα μεγάλα φαίνεσθαι;

That is, (4): the Form by which *f*-things become *f* is *f*. Furthermore, (5): the Form *F* by which *f*-similar things become *f* is numerically different from each of these *f*-things. Then Plato draws the well-known conclusion that,

So another form of largeness will make its appearance, which has emerged alongside largeness itself and the things that partake of it,

and in turn another over all these, by which all of them will be large.
Each of your forms will no longer be one, but unlimited in multitude.
(132a9–b2)

Ἄλλο ἄρα εἶδος μεγέθους ἀναφανήσεται, παρ' αὐτό τε τὸ μέγεθος
γεγονὸς καὶ τὰ μετέχοντα αὐτοῦ· καὶ ἐπὶ τούτοις αὖ πᾶσιν ἕτερον, ὃ
ταῦτα πάντα μεγάλα ἔσται· καὶ οὐκέτι δὴ ἓν ἕκαστόν σοι τῶν εἰδῶν
ἔσται, ἀλλὰ ἄπειρα τὸ πλήθος.

The TMA gives rise to a regress and a contradiction. The regress arises as follows: since the Form *F* too is *f*, there will be a different Form *F** over it, on account of which, by the *Contagion Principle*, Form *F* is *f* and *f*-similar to other *f*-things. The contradiction is the following: if a Form *F* makes a partaking object *f*, the Form purports but fails to make this object similar to all *f*-things; specifically, it fails to make this object similar to this Form *F*, which is an *f*; hence, the Form *F* does *not* make this partaking object *f*.

What has gone wrong? Why do the regress and the contradiction arise? I argue that the problem lies in an explanatory failure of the *Contagion Principle*. Although the principle purports to explain the causal ancestry of *each* instance of being *f* through a *One Over Many* account of the source *S* of their *f*-ness, what the TMA shows is that the principle can explain the causal ancestry of all *f* instances *but one*: the principle cannot provide a causal explanation of the *f*-ness of each source *S*. And yet, the *Contagion Principle* requires that this explanation be sought, by assuming that source *S* is *f* and *f*-similar to other *f*-things: where did all these *f*-things 'contract' their *f*-ness from? If the only explanation of being *f* the *Contagion Principle* can offer is the causal 'mechanism' of 'contagion', then an explanatory lacuna is generated regarding the *f*-ness of Source *S*. The *Contagion Principle* posits Source *S* as the *ultimate* source of *f*-ness, which 'transmits' *f*-ness to all the *f*-things in the world. However, this very statement begs the question: If the *Contagion Principle* assumes that *every* *f*-thing becomes *f*, then how does Source *S* become *f*? If Source *S* (of *f*-ness) *becomes* *f*, a regress of sources of *f*-ness ensues; this contradicts the *Contagion Principle*'s claim that Source *S* is the *ultimate* source. If, on the other hand, the *Contagion Principle* does not offer this explanation for the

f-ness of Source *S*, then it will not be able to explain *all* instances of *f*-ness in the world, as it purports to; there would be an explanatory lacuna in the case of the qualitative states of all the Sources of types of *f*-ness. *Mutatis mutandis* for the theory of Forms.

In thinking about how Plato might address the TMA challenge, I assume the following theoretical points as fixed: first, Form *F* is *f*. The reason is that this is the core feature of the *Contagion Principle*—the source *S* is *f*. Second, according to the *Contagion Principle*, *f*-things are similar to Source *S*, having 'contracted' its condition, and so, *f*-things are similar to the Form *F* they partake in. Third, the *Contagion Principle* accounts for both *f*-things' being *f* and *f*-things' being *f*-similar. As we saw, these three commitments of Plato's give rise to infinite series of Sources and Forms. Concentrating now our attention on the Forms in the resulting series: they are all *f*, but numerically different from each other. This is a problem: the TBA shows that there cannot be qualitatively identical Forms which are numerically distinct. With the TBA Plato has argued for the uniqueness of each Form; he cannot therefore, by his own principles, reify a Form *F* into an infinite series of *f*-Forms, which would also undermine the *One Over Many Principle*.³⁵

Can Plato, then, address the TMA challenge, if the option of reifying each *f*-Form into an infinite series of *f*-Forms is ruled out by the TBA? The scholarly literature concerning what the solution might be is vast, ranging from (what we might call) 'realist' to 'nominalist' interpretations of the Forms. It is impossible to pay justice here to the variety

³⁵ Interestingly, Aristotle does posit an infinite series of *f*-sources as the causal ancestry of any type of substance—e.g., Socrates descends from an infinite series of human beings (see *Metaphysics* 1032a25, 1033b32, 1070a8, 1070b34: ἀνθρώπος ἀνθρώπων γεννᾷ). This, in effect, renders the source of *f*-ness an infinite series of *f*-nesses, with the advantage that every instance of an *f*, e.g., of being human, has an *f*-source that makes it *f* by contagion. The difference between Aristotle's infinite series of *f*-sources and Plato's infinite series of *f*-Forms as generated by the TMA is that Aristotle *can* distinguish between different *f*-sources in an infinite series (as the different sources have the same form but instantiated in different matter); whilst Plato does not have the means of distinguishing between numerically different *f*-Forms in an infinite series of such Forms. Additionally, Aristotle solves the causal origin problem generated by the unrestricted application of the *Contagion Principle* differently than Plato does. Plato appeals to the Forms both to account for causal origin and to satisfy the *One Over Many Principle*. Aristotle, on the other hand, uses the causal series of *f*-ancestors to address the causal origin question, through the passing of the form from parent to offspring; and further, posits universal forms in his ontology to satisfy the *One Over Many* (e.g., of the *Categories*).

of ingenious readings that have been offered of TMA and of each of its premises, because the enormity of the task would lead us astray from the overarching argument of this book. However, I promise a novel account of Plato's response to the TMA, which I develop in section 7.2 of chapter 7.

Gregory Vlastos (1954) has been a milestone in the modern debates around the TMA; he laid bare, in the premises of the argument, the principles around which discussions of the TMA and its possible solutions have subsequently centred. These are the *Self-Predication* and the *Non-Identity* principles, which we have already encountered at various points in the previous chapters. I have shown here that both these premises are derived from the type of causal explanation provided by the *Contagion Principle*. The *Contagion Principle* posits origins: there is an ultimate source of each type of qualitative state *f*. Yet, the *Principle* does not explain how each source is/has become *f*. Plato undertakes to give such an explanation within his theory of Forms, by using the only causal model the *Principle* allows, namely by 'contagion'. So, if the Form of Heat is hot, it is/has become hot by 'contagion', i.e., by partaking in a Form of Heat. What this shows is that for Plato, each TMA regress is witness to an infinite series of *becomings* of each Form *F*, which *has become f*. This, I claim, is the problem the TMA brings to the fore: Plato had mixed Being with Becoming in his theory of Forms, because a *f*-Form *has become f*. The solution for this problem is that a *f*-Form is *primitively f* in the World of Being; it does not *become f*; this, as we will see in section 7.2 of chapter 7, is the position Plato presents in the *Timaeus*, which resolves the problem that the TMA raises. Although a number of alternative solutions for avoiding the TMA regress have been developed in the scholarship, to rescue Plato's theory, what has not been appreciated so far in the literature is that *Plato himself* saves his theory from the seemingly fatal problems that TMA raises.

I submit that the *becoming of being* is the problem that Plato identifies at the roots of the TMA regress. In a nutshell, the problem is that if a Form *F* *becomes f*, a regress of *f*-becomings follows; but if a Form does not become *f*, there is no explanation of its being *f*, neither according to the *Contagion Principle*, nor according to the only 'mechanism' the theory of Forms explains property possession, i.e., by partaking in a Form. Plato will opt for the latter solution, taking the metaphysical

stance that there is *no causal explanation* of a Form's *f*-ness. What Plato thereby ultimately rejects is the TMA's assumption that a Form *F* ever *becomes f*. He rejects it because becoming has no place in the World of Being.³⁶ Let us here look at what leads Plato to develop this solution. The solution is, unsurprisingly, Anaxagorean. For Anaxagoras, e.g., the Opposite Hot never *became* hot; it is primitively and eternally in the world as it is. More surprisingly, for Aristotle too, the form, e.g., 'human being' is eternally in the world as it is. For Plato, this becomes a metaphysical imperative: true Being (the Forms) does not *become* what it is, because Being cannot be derived from Becoming, either by being generated, or constituted by Becoming; Being is prior to Becoming. In consequence, as we will see in chapter 7, in the *Timaeus* Plato posits the *paradeigma*, as 'pure' Being, which has never been Becoming, and will never be Becoming, or suffer Becoming. When positing the *paradeigma*, Plato retains the idea that the source of *f*-ness is *f*, but develops a new 'mechanism' of how the property of the source is 'transmitted' to other objects: by means of the *Demiurge*.

5.6. Closing remarks

In this chapter, we examined key issues concerning the Forms' metaphysical complexity. One of the most significant interpretative results concerns the *Dilemma of Composition*. As I will argue in chapter 6, Plato's ontology does not contain relations. His ontology comprises only individuals (things in the sensible world, and the transcended forms), which overlap (in various ways and combinations) with each other. I submit that this has consequences for Plato's conception of mereology. Without relations to connect and unite the parts into wholes, a whole is either the totality of the many parts, or a unity, wherein the constituents have no discreteness of the kind that *connected parts* enjoy. In his relationless ontology, there is no room for a third option: that of a whole, whose unity results from the *interrelations* among the parts.³⁷ In the case of the *properties* of a whole of parts,

³⁶ I will argue for this interpretation in chapter 7.

³⁷ Contrary to Harte's (2002) overall interpretation of Plato's mereology, that attributes to him a relational type of holism, where the identity of the parts of the whole is

either the properties of the whole are derived from the properties of its parts, e.g., the whole is beautiful because each of its parts is beautiful; or the whole has properties *of its own*, without inheriting properties from its parts, e.g., the whole is (a pair of) two, x and y , without x or y being two (as we will see in discussing the *Hippias Major* and the *Phaedo*, in chapter 6). In the case of the *wholeness* of a whole of parts, Plato reasons in a similar way (as per the *Dilemma of Composition*); either a whole derives its identity *from its parts*, being identical to their plurality, or the whole has a wholeness *of its own*, independently of the parts, and therefore, not emerging from (any type of unification of) the parts. To illustrate, either a syllable is identical to its parts, and therefore the syllable is its letters; or a syllable is a whole of its own, independently of any parts, and hence, a whole that has no parts. What is *not* an option for Plato is that the *wholeness* of the parts is built out of the *interrelatedness* between them, e.g., that a syllable is its letters *plus* the relation connecting them.

In this chapter, we also examined a difficulty for Plato's theory of Forms due to the *Contagion Principle*, which emerges with Plato's most well-known and most debated *Third Man Argument*. The *Contagion Principle* introduces unwanted complexity in the Forms, requiring that Forms *become* what they are. The *Contagion Principle* and the theory of Forms do not only stand together; they also fall together, as I argued above in relation to the TMA. I showed that the problem that arises with the *Contagion Principle* of explanation—i.e., regressive causal explanations—generates a new problem in the theory of Forms, namely, it introduces becoming into the World of Being. The *becoming of being* is what Plato will excise from the theory of Forms, to block the TMA regresses, as I will argue in chapter 7.

determined by the relations they hold with each other within a given structure (as per her dinner party example, introduced here at p. 89).

6

Overlap, relations and relatives

6.1. Introduction

Plato's ontology includes, on the one hand, transcendent Forms, and on the other, sensible particulars, plus the 'relation' of participation by which the Forms constitute and qualify sensible particulars in the world. I argued in the preceding chapters that (until the *Timaeus*) Plato follows Anaxagoras's lead and conceives of participation as constitutional overlap between the sensible objects and the properties the Forms stand for. Plato, however, does not simply inherit Anaxagoras's model for participation; as we saw in the preceding chapters, he examines it critically, both with respect to its explanatory power and with respect to its 'fit' with the theory of Forms. Plato also enriches the model, thus breaking new ground in metaphysics—we will examine how in the present chapter. I will argue that Plato's goal and challenge is to extend Anaxagoras's model of constitutional overlap, so that it can be the main tool in his metaphysical system that accounts for: (i) how objects in the world are qualified by properties, (ii) how objects relate to other objects (and Forms relate to other Forms), (iii) how necessity governs property possession, and (iv) how structure¹ is embodied in objects.

The task Plato sets out to accomplish is difficult; his attempt to extend Anaxagoras's model will yield a number of metaphysical breakthroughs, even if Plato eventually departs from this model in the *Timaeus*. In this chapter I will specifically investigate how Plato innovates on Anaxagoras's model by introducing different types of partaking. I will argue that for Plato, objects may partake in Forms in two ways: *individually*, and *plurally*. The role of plural partaking has been

¹ E.g., being a bed, or being a pair.

hardly explored in the scholarly literature so far.² I will show that Plato introduces two types of *plural partaking*, which I differentiate thus:

- (1) *Joint-partaking*: When two (or more) individuals partake jointly in one and the same Form; as for example in the case of Socrates and Hippias being two, or in the case of things being equal to each other, where the joint-partakers share between them a single part of the Form;
- (2) *Parallel-partaking*: When two or more individuals partake, in parallel with each other, of a Form each; as in the case of Socrates partaking in the Form of Largeness, while Simmias partakes in parallel in the Form of Smallness.

I will show that both kinds of plural partaking are types of constitutional overlap; but Plato's use of constitutional overlap at this stage is metaphysically more complex than the original model Anaxagoras had introduced. I submit that Plato's enrichment of Anaxagoras's model with plural partaking is potentially of interest to metaphysicians at large. One way to bring this out is to contextualize Plato's position within a debate that is nearly as old as the history of philosophy itself: the debate concerning the metaphysics of relations. It is agreed by all that relational statements about the world track ways the world is; for instance, Socrates is married to Xanthippe; honey is sweeter than figs; Plato is as well known as Aristotle; etc. What is debated is whether the truth-makers of such statements are properties that individuals have singly (what we call in contemporary metaphysics *monadic properties*); or whether the truth-makers are a different type of property (what we call *polyadic properties*). Many metaphysicians hold what can be characterized as *relation realism*, according to which, in E. J. Lowe's words, 'a further relational entity [over and above the *relata*] is invoked to explain the truth of that relational sentence' (2016: 103); this additional entity is a polyadic property. I object to relation realism, because committing to polyadic properties amounts to positing *multi-tasking properties*. Properties qualify objects, e.g., as red; but polyadic

² The only exception, to my knowledge, is Scaltsas (2016).

properties qualify the objects they relate, and (supposedly) *additionally relate* them to one another. Relations realists do not give any account of this metaphysical multitasking.³ I will show that Plato does not face this issue, because his ontology is relationless.⁴ I will argue that Plato does not posit relations as extra entities in the ontology, but rather different types of constitutional overlap, to serve as truth-makers of relational claims. Insofar as we have reason to think that it is problematic to admit relations in the ontology, we have reason to acknowledge Plato's stance as worth exploring for both scholarly and more general philosophical reasons.

Further, type (2) of plural partaking, i.e., parallel-partaking, is governed by necessity: for instance, given their respective sizes (which I will take here to refer to their heights), Simmias cannot but be small in comparison to Socrates. This requires Plato to innovate further, to account for the *necessary patterns of participation* that exist in nature. I argue that Plato addresses the challenge by once again making use of partaking understood as constitutional overlap. We will see that in the *Sophist*, Plato enriches the theory of Forms by adding an extra tier of Forms, the Great Kinds, as well as a further type of participation, in this case between Forms: first-order Forms participate in second-order ones. I call this type of participation *permeation* of a Form by another. With these new metaphysical tools, I will argue that Plato can address two metaphysical challenges that, to this day, have proven very difficult: the ontology of relations and of necessity.

³ The most problematic case for relations realists is that of asymmetric relations. For example, if motherhood *qualifies* one person *as a mother*, how can the same polyadic property also *qualify* another person *as offspring*, and additionally *relate* them? This is metaphysical multitasking, in more ways than one. An alternative view in contemporary philosophy is that relations only qualify objects, but that they qualify them with *impure properties*, namely, with a property-in-relation-to-an-object. Thus, in the case of the motherhood relation, the individual *m* is not qualified as being a 'mother', but as being a 'mother-of-*o*', where *o* is the other individual, the offspring; while *o* is qualified as an 'offspring-of-*m*'. This is not a solution to the riddle of relations, since it introduces a riddle in the very conception of a property which qualifies an object 'relationally'.

⁴ Plato's view aligns in this respect, with both Anaxagoras and with Aristotle, who did not admit relations in their ontologies. Arguing for this interpretation would take us afield; so I will here only state it.

6.2. Plural partaking: joint-partaking and parallel-partaking

How does constitutional overlap in Plato's system do the metaphysical work that relations putatively do in other systems? I will address this question in three steps, looking first at the case of symmetric 'relations', then asymmetric 'relations', and finally multigrade 'relations'.

6.2.1. Symmetric 'relations' as joint-partaking

In the *Hippias Major* Plato shows awareness of the following linguistic (and metaphysical) phenomenon, illustrated by an example:

[...] we thought that each of us was one, but that we were not both that which each of us was—for we are not one, but two. (301d5–302b3)

[...] ἑκάτερος ἡμῶν εἷς ἐστι, τοῦτο δὲ ὁ ἑκάτερος ἡμῶν εἶη οὐκ ἄρα εἶμεν ἀμφοτέροι—οὐ γὰρ εἷς ἐσμεν, ἀλλὰ δύο.

How are Socrates and Hippias two, without each of them, individually, being two? Who possesses twoness, if neither Socrates or Hippias does? The metaphysical 'anomaly' of this case can be seen by contrasting it with that of, e.g., chairs that are *all* brown because *each* of them is brown. In contemporary philosophy, we call this phenomenon *plural predication*;⁵ Plato was the first to identify it. At a very general level, there are two ways metaphysicians address plural predication: either by treating the many individuals (here, Socrates and Hippias) as a single subject, which possesses the plural property; or by treating the individuals as many subjects that somehow possess the property between them. Among those who have significantly contributed to our understanding of plural predication, Gottlob Frege has pursued the former strategy. His thought will be a helpful foil to understand Plato's.

⁵ A recent comprehensive study of the phenomenon is McKay (2006).

Frege holds that in plural predication there is one subject to which the predicate in question belongs; he writes,

[...] the phrase 'the Romans' in the sentence 'the Romans conquered Gaul' is to be regarded as a proper name, for we are not saying of each Roman that he has conquered Gaul; we are speaking of the Roman people, which is to be regarded logically as an object. (in Oliver, 1994: 75–6 = Frege, 1979: 95)

This is not however a solution we could apply to understand Plato's example in the *Hippias Major*: his chosen example of a plural predicate, 'being two', makes explicit his stance concerning the subject of the predication: Socrates and Hippias cannot be regarded as a single subject; if they were a single subject, they would become one entity, and the statement that they are two would become false.

Plato is careful to specify, with another example in the *Hippias Major*, that plural predication does not require that each of the relevant subjects has the property.⁶ In his example, things can be beautiful severally, and in addition, beautiful together. That is, even if each thing is beautiful, it still doesn't follow that they are also jointly beautiful. In fact, they may be jointly ugly. So, being singly beautiful and being jointly beautiful are two different qualifications of objects; objects are qualified by partaking in Forms, therefore two different qualifications correspond to two different partakings. So how can Plato account for plural predication? He does not provide any further explanation in the *Hippias Major*, but only a clue:

That's why I thought that it was *by the being that adheres to both*, if both are [jointly] fine—it was *by that* they had to be fine, and not by what [finess] falls off one or the other. (302c3–7, my emphasis)

τούτου δὴ ἕνεκα τῇ οὐσίᾳ τῇ ἐπ' ἀμφοτέρα ἐπομένη ᾧμην, εἴπερ ἀμφοτέρᾳ ἐστι καλὰ, ταύτῃ δεῖν αὐτὰ καλὰ εἶναι, τῇ δὲ κατὰ τὰ ἕτερα ἀπολειπομένη μὴ·

⁶ Two things are, each, one, not two.

To gain understanding of Plato's position on plural predication (e.g., being two), we need to bring together the account given in the *Hippias Major* and the account in the *Phaedo*. In the *Phaedo*, Plato rejects a number of potential explanations regarding what makes something two (96e–97b). He asserts that he relies on his own explanation, be it unclear, in terms of the theory of Forms: 'and I do not accept it [the old method of explanation], but I have a confused method of my own' (ἀλλὰ τιν' ἄλλον τρόπον αὐτὸς εἰκῇ φύρω, τοῦτον δὲ οὐδαμῇ προσίεμαι. 97b6–7). He then proceeds to outline the explanation for being qualified as two which his theory provides. He states, generally about qualification, that

[. . .] you would loudly exclaim that you do not know how else each thing can come to be except by sharing in the particular reality in which it shares [. . .]. (101c2–4)

[. . .] μέγα ἂν βοῶνς ὅτι οὐκ οἶσθα ἄλλως πως ἕκαστον γιγνόμενον ἢ μετασχὼν τῆς ἰδίας οὐσίας ἐκάστου οὗ ἂν μετάσχη [. . .].

Therefore, the passage continues, a thing acquires a qualification by participating in the Form that stands for this qualification. This explanation is then extended to the case of becoming two:

[. . .] in these cases you do not know of any other cause of becoming two *except by sharing in Twoness* and that the things that are to be two must share in this, as that which is to be one must share in Oneness, and you would dismiss these additions and divisions and other such subtleties, and leave them to those wiser than yourself to answer. (101c4–9, my emphasis)

[. . .] ἐν τούτοις οὐκ ἔχεις ἄλλην τινὰ αἰτίαν τοῦ δύο γενέσθαι ἀλλ' ἢ τὴν τῆς δυάδος μετάσχεσιν, καὶ δεῖν τούτου μετασχεῖν τὰ μέλλοντα δύο ἔσεσθαι, καὶ μονάδος ὃ ἂν μέλλῃ ἐν ἔσεσθαι, τὰς δὲ σχίσεις ταύτας καὶ προσθέσεις καὶ τὰς ἄλλας τὰς τοιαύτας κομψείας ἐφ' ἧς ἂν χαίρειν, παρεῖς ἀποκρίνασθαι τοῖς σεαυτοῦ σοφωτέροις.

The explanation is 'safe', as Plato has described it (100e1), and generalizes. It states that when an object is (or comes to be) qualified, it is qualified by partaking in the Form that stands for that quality. Putting now together the two accounts from the *Hippias Major* and the *Phaedo*, we can conclude that, if things are individually beautiful and also jointly beautiful, then they are each beautiful by each *partaking individually* in the Form of Beauty, and they are jointly beautiful by *partaking jointly* in the Form of Beauty. How do two different things partake jointly in a Form? If partaking is having a part of a Form, then the claim Plato is making here is that there is a part of the Form of Beauty that *x* and *y* share between them, independently of whether *x* and *y* each have, also, a part of Beauty of their own. Thus, *x* and *y* share a single part jointly between them, overlapping constitutionally with the Form of Beauty, and, importantly, also overlapping constitutionally *with one another* by sharing this part of the Form. Similarly, in the case of being two: *x* and *y* are jointly qualified as being two by jointly partaking of a part of the Form of Duality/Twoness, namely, by both overlapping with the Form *and* between themselves, as we saw in the *Phaedo* passage quoted earlier.

The reasoning I have developed shows that Plato accounts for *symmetric qualifications* (e.g., being two) by means of joint-partaking. I will argue next that joint-partaking accounts for (what we call) *symmetric relations*, too. Plato has identified a case of putative symmetric relation already in the *Phaedo* where he talks about one log of wood being equal to another, or one stone to another (74a9–11), where being equal (ἴσον) is what *we* would identify as a symmetric relation. The example and the passage in question have been extensively discussed in the scholarly literature, for what they show concerning Plato's theory of recollection (which will not interest us here), and, more relevantly to our present purposes, because in the text Plato refers to the relevant Form in a variety of ways—which has puzzled commentators. The Form *Equal* (φαμέν πού τι εἶναι ἴσον; 74a9–10) is *the Equal itself* (αὐτὸ τὸ ἴσον, 74a11–12), that is, *the Equals themselves*, or *Equality* (αὐτὰ τὰ ἴσα [. . .] ἢ ἡ ἰσότης 74c1–2). I will argue that these are not merely terminological alternatives; there are important metaphysical reasons why Plato vacillates from one expression to another. He does not discuss his reasons, but we are now well positioned to understand them

and why the issue is metaphysically significant. At the heart of it is the tension between the structural features of Forms on the one hand, and the requirement that Forms be *monoeides* on the other.

With reference to Plato's example, nothing can be equal without being equal *to* something. If Forms are paradigms of the qualities they stand for, as per the *Self-Predication Principle*, we should expect the Form of the *Equal itself* (αὐτὸ τὸ ἴσον, 74a11), to be an instance of perfect equality, namely, to be the *Equals themselves* (αὐτὰ τὰ ἴσα, 74c1); in this way the Form would conform to the *Self-Predication Principle*, which characterizes all Forms.⁷ However, the *Equals themselves* are structured, and as such, cannot be *monoeides*; but the *Equal itself* or *Equality, qua* fusion, is.

We saw in the *Hippias Major* that a single thing on its own cannot be qualified as being two; nor, in the *Phaedo*, can a single thing partake on its own of the Form of Duality/Two-ness; for similar reasons, a single thing could not partake individually of the Form of Equality/the Equals. For Plato, equal things are equal, but *not to one another*, through a relation of equality; rather, they are equal *together with one another*, by joint-partaking in the Form of Duality/Two-ness. Partaking does one metaphysical job only: it qualifies. So, when two things overlap together with a single part of the Form of Equality/the Equals, they become both qualified as equal; they do not become *additionally* related to each other (contrary to what many or most modern metaphysicians would posit). Generalizing from these examples, Plato understands what we would call symmetric relations as joint-qualifications. Thus, joint-partaking enables Plato to provide an account of both symmetric qualifications (e.g., being two), and of what we would call symmetric relations (e.g., being equal) among individuals. His solution is, at once, also a challenge to modern philosophy: why would any additional ontological item (relations) be needed to handle the cases that Plato

⁷ See preceding discussions of the *Principle*, in particular in section 4.7 of chapter 4. Although it is not uncontroversial among modern scholars whether Plato retained or abandoned at some point the *Self-Predication Principle*, I hold that he never abandons it, because even as late as the *Timaeus* (30d1–3), things in nature resemble the Forms—the *paradeigma*.

accounts for in terms of plural qualification? Can we too conceive of symmetric relations as a type of overlap between objects?⁸

6.2.2. Asymmetric 'relations' as parallel-partaking

Plato discovers what we call asymmetric relations in the *Phaedo*, e.g., being larger or smaller, which are *comparative qualifications*. There are however no *comparative Forms* in Plato's system (just as there aren't relational Forms), for larger and smaller items to partake in and be comparatively qualified by. So Plato has to explain comparatives in terms of non-comparatives, as he states: 'every larger thing is larger than another *by nothing else than largeness*' (*Phaedo* 101a2–3, my emphasis).⁹ Plato further registers that comparative qualifications are (by necessity) *co-dependent*: so, Simmias's being smaller than Socrates *co-varies* with Socrates' being larger than Simmias. Plato explains this co-dependence in terms of the objects compared (here, Simmias

⁸ In what follows, I show how Plato addresses the problem of symmetric and asymmetric relations in his theory of Forms, without positing relational Forms. However, and importantly, the possibility of accounting of relations in terms of qualitative overlap is independent of Plato's specific commitments of the theory of Forms.

⁹ John Brentlinger (1972) relates Plato's concern to explain relatives to his departure from some of Anaxagoras's tenets. Our interpretations differ very significantly. Brentlinger argues that Anaxagoras' conception of properties as physical parts of things cannot pay justice to the relativity of some properties, e.g., Simmias being larger than Socrates. From this, Brentlinger concludes that Plato is led to render Forms transcendent, since they could not be physical (and this would be his departure from Anaxagoras):

This essay has been concerned with the motives behind Plato's announcement, in the *Phaedo*, that forms are transcendent [...] the issues Plato raised about attributives (hence, relatives, e.g. large) and relations give a motive for the separation of forms and particulars: no immanent attributive property can be construed as a part of the particular to which it belongs. (1972: 79)

Brentlinger, however, does not explain how making the Forms transcendent would help Plato in addressing the problem of the relativity of some of the properties of things; nor can I see the relevance between the two issues of relativity and transcendence. On my interpretation, Plato solves the problem of the other-dependence of attributives and comparatives through his introduction of plural-partaking of Forms, as, e.g., in the case of Socrates and Hippias jointly partaking of the Form of Duality/Twoness; and of Simmias and Socrates partaking in parallel respectively in Largeness and Smallness, as I show in what follows. Plato does depart from Anaxagoras in conceiving properties as transcendent, but this is not, on my account, due to how he thinks of relatives.

and Socrates) partaking in contrary, non-comparative Forms (here, the Forms of Smallness and Largeness): '[. . .] Simmias is [. . .] greater than Socrates because [. . .] Socrates has *smallness* in relation to¹⁰ his [Simmias's] *largeness* [. . .]' ([. . .] τὸν Σιμμίαν ὑπερέχειν Σωκράτους [. . .] ὅτι σμικρότητα ἔχει ὁ Σωκράτης πρὸς τὸ ἐκείνου μέγεθος [. . .]. 102b8–c5, translation modified). Continuing on, in the same passage Plato further recognizes that comparative qualifications (e.g., larger/smaller) depend on further non-comparative qualifications of objects (e.g., size, height):¹¹

Simmias is called small and large, when he is between the two [between Phaedo and Socrates], surpassing the smallness of the one by exceeding him in *height*, and granting to the other the largeness that exceeds his own smallness. (102c9–d2)

ὁ Σιμμίας ἐπωνυμίαν ἔχει σμικρός τε καὶ μέγας εἶναι, ἐν μέσῳ ὧν ἀμφοτέρων, τοῦ μὲν τῷ μεγέθει ὑπερέχειν τὴν σμικρότητα ὑπέχων, τῷ δὲ τὸ μέγεθος τῆς σμικρότητος παρέχων ὑπερέχων.

Plato is registering here a dependence between different non-comparative Forms (of Largeness and Smallness) that grounds the corresponding co-varying comparatives qualifications of the partakers (as larger/smaller). This raises the question of how *ontological dependence* is or may be reified in the theory of Forms.¹² We find a clue as to how Plato understands this dependence in the *Phaedo*; but we learn

¹⁰ This is a relational statement, which I reproduced here in the standard translation of πρὸς as 'in relation to'. The issue we are debating here is not whether Plato (or we) allow for relational statements, but rather which ontology underpins them, i.e., what are the truth-makers for such statements.

¹¹ I here offer a conjecture: Plato seems committed to distinguishing between something being, e.g., hot and something being hotter, where only the latter is a comparative. The scholarly literature of Plato, too, has treated comparatives as a special case of opposite qualifications. However, one could argue that being hot, or any opposite qualification, is always comparative. Why does Plato not see this (which Democritus had seen, e.g., in fr. 9)? My conjecture, related to the passage quoted here, is that it is possible that there is a latent thought in Plato that just as someone can be for instance 180 cm tall, as well as taller than someone else, similarly something can be hot, and hotter than something else; namely, maybe Plato thinks that heat is, like magnitude (μέγεθος), a primary qualification, that on occasion can ground comparatives too.

¹² Héctor-Neri Castañeda (1972) for instance writes,

more from the *Sophist*, where Plato emphasizes the difference between being *f in itself*, and being *f in relation to* (πρός τι) something else; for instance,

When we say it's [i.e., change is] the same, that's because it shares in the same *in relation to itself*. But when we say it's not the same, that's because of its association with the different [i.e., not in relation to itself] [...]. (256a12–b2, my emphasis).

ἀλλ' ὅποταν μὲν ταυτόν, διὰ τὴν μέθεξιν ταύτου πρὸς ἑαυτὴν οὕτω λέγομεν, ὅταν δὲ μὴ ταυτόν, διὰ τὴν κοινωνίαν αὐθαρτέρου [...]

Is Plato positing here relational Forms, whose modern equivalent would be polyadic properties? Is being-the-same-in-relation-to an example of such type of Forms? Is this Plato's way to reify the aforementioned ontological dependence between Forms that grounds co-variation of the corresponding comparative qualifications of objects (e.g., larger and smaller)? Making a departure from the mainstream scholarly approach to this issue,¹³ I argue that Plato's way forward is *not* to posit relational Forms, but rather, to posit an additional tier of *monadic* Forms, and a *new type of partaking*. Plato introduces the extra tier of Forms in the *Sophist*. There Plato posits the so-called Great Kinds (μέγιστα γένη). He mentions five of them (Being, Sameness,

[...] the fact [...] expressed by the sentence 'Simmias is taller than Socrates' must be understood as involving: (1) the two Forms Tallness and Shortness, (2) participation in each Form by one person only, (3) a *connection* between the two Forms that requires that they be participated in simultaneously. (1972: 417, my emphasis)

However, the nature of this postulated 'connection' in the theory of Forms, how it would come about, and what work it would do metaphysically in Plato's system is left unaccounted for by Castañeda.

¹³ A representative of this line of interpretation that would make Plato a realist about relations is, among others, Julius Moravcsik (1992, chapter 5 in particular). Harte (2002: 152–3) gives a clear characterization of Moravcsik's position, thus: 'when one kind, X, combines with another, F, such that X may be said to have the property of being F, this may be represented as follows: X is F = X—(connector, i.e., Being)—F'. In other words, Moravcsik reifies the Great Kinds as connectors, relations in the ontology, which connect Forms as if bridges between Forms.

Difference, Motion, and Rest); but he does not restrict their number in any way.¹⁴

Before examining what is metaphysically special about the Great Kinds, I want to note that I consider the doctrine of the Great Kinds an unfinished metaphysical experiment by Plato. Neither the selection of which Forms are Great Kinds is complete; nor the metaphysical roles the Great Kinds have are carefully distinguished and assigned to each; nor the new type of overlap is given a precise metaphysical role to play in Plato's system. Yet, this experiment shows Plato's awareness that more than partaking in (first-order) Form is needed to give a full metaphysical explanation of how things are.

I interpret the Great Kinds as second-order Forms (i) some of which *qualify* all items (Forms and sensible things) in Plato's ontology with general or unrestricted scope of application; and (ii) some of which *govern* further Forms, by setting *necessary conditions* that Forms and sensible things obey. For instance, the Great Kind of Being applies to everything in the universe; and the Great Kind of Same necessarily applies to any partakers of any Form. So Plato reifies necessity via (some of) the Great Kinds. To be clear: there are qualifications that things have necessarily, such as being self-same; my claim is not that Plato discovers *this* in the *Sophist*, but rather that in the *Sophist* he attempts to account for the necessity of some qualifications things have by means of the Great Kinds, which are a way to reify necessity. Put differently, my point is that without the Great Kinds, Plato did not have a 'mechanism' that would account for why certain ways things are qualified are necessary (e.g., for the number 1 to be prime), and some are (to use an Aristotelian term) accidental (e.g., for Helen to be beautiful). (Plato had seen this distinction as early as in the *Phaedo* 102–7.)

Plato compares the Great Kinds to vowels, which make it possible for the consonants to make up words of language:

¹⁴ There are reasons to think there are many more Great Kinds in Plato's system than the ones explicitly mentioned (see, e.g., the generality of his statement in the *Sophist* that '[...] some kinds will mingle with one another and some won't', [...] τῶν γενῶν τὰ μὲν ἀλλήλοις ἐθέλειν μίγνυσθαι, τὰ δὲ μή [...], 254b8–9, translation modified).

'Since some [Forms] will intermingle and some won't, they'll [the Great Kinds will] be a good deal like letters of the alphabet. Some of them fit together with each other and some don't.' 'Of course.' 'More than the other letters, the vowels run through all of them like a bond, linking them together, so that without a vowel no one of the others can fit with another'. (252e9–253a6, translation modified)

ὅτε δὴ τὰ μὲν ἐθέλει τοῦτο [i.e., συμμείγνυσθαι] δρᾶν, τὰ δ' οὐ, σχεδὸν οἷον τὰ γράμματα πεπονητότ' ἂν εἴη. καὶ γὰρ ἐκείνων τὰ μὲν ἀναρμοστέϊ που πρὸς ἄλληλα, τὰ δὲ συναρμόττει. πῶς δ' οὐ; τὰ δέ γε φωνήεντα διαφερόντως τῶν ἄλλων οἷον δεσμός διὰ πάντων κεχώρηκεν, ὥστε ἄνευ τινὸς αὐτῶν ἀδύνατον ἀρμόττειν καὶ τῶν ἄλλων ἕτερον ἑτέρῳ.

I understand Plato as telling us here that vowels make language possible; they are *conditions* of the possibility of language. Think of the Great Kind Being: it is a *condition* of the possibility of the world. (*Necessity* is intermingled in this, even if its role is not fully articulated by Plato.) On the basis of this passage just quoted, and others, readers of the *Sophist* by and large think instead of the Great Kinds as involving relationality, in two different ways: either two things are related *by the relation* of, e.g., difference, by partaking of the Great Kind Difference;¹⁵ or, things partake of the Great Kind Difference, *in*

¹⁵ As we have seen, Julius Moravcsik (1992, chapter 5 here in footnote 127) reads the Great Kinds as relational. Harte responds to Moravcsik's interpretation, accusing him of being mistaken on textual grounds, and arguing that vowel-like kinds are not 'the agent of composition'; rather, she holds that,

the vowels and vowel-like kinds are identified as things that hold the other letters or kinds together so that they [the kinds, namely the Forms] are *capable* of combining with one another (of fitting or mixing together). Vowels, that is, operate as necessary—but not sufficient—conditions for the combination of letters and kinds; they do not bring about such combination. (2002: 153)

I believe there is, however, a problem with Harte's interpretation of the Great Kinds. She aims to describe the vowel-like kinds as *enablers* (as 'necessary conditions') of the combinations of the other kinds, namely, as catalysts of these combinations, but not as *connectors* in the way Moravcsik describes them, as if they were causal agents that generate such connections. However, the vowel-like kinds for Plato are *more than* catalysts for the combination of other kinds: they enable combination *by themselves combining* with the other kinds, as the text also makes clear. The vowel-like kinds are part of the resulting

relation to other things which are different from them.¹⁶ With respect to the second line of interpretation, which usually relies on texts where the expression πρὸς τι figures, my objection is that there is no feature of the theory of Forms which could possibly reify a relation between two things, which grounds one of these things partaking of a Form—e.g., a book partaking of the Great Kind Difference in relation to another book. Making the claim that partaking of the Great Kind Difference is grounded on, e.g., this book having a relation to another book, which cannot be explained or ontologized in the theory of Forms, is a non-starter.

So, how do the Great Kinds operate if they aren't relational Forms? Plato does not facilitate our understanding with the language he uses: he says that the Great Kinds commune with the other Forms (κοινωνεῖν); they are mixed with them (μείγνυσθαι); they permeate them (κεχώρηκεν, διεληλυθότε); but they are also partaken by them (μετέχειν). Although Plato is not systematic in his terminology, I argue we can see that he is differentiating here between *two different types of overlap*: the first is constitutional overlap—the partaking (μετέχειν) in Forms that we have discussed already at length. I call the second type *permeation* (described by Plato with a range of expressions such as κοινωνεῖν; μείγνυσθαι; συμμείγνυσθαι; οἷον δεσμός διὰ πάντων κεχώρηκεν; διὰ πάντων διεληλυθότε). We have also encountered the second type of overlap as early as in the introduction of the Forms in the *Phaedo*, where Plato wonders but remains undecided about

combination of kinds. In Plato's conception of them, vowel-like kinds are like mortar for bricks in a wall; the mortar both enables and connects the bricks, even though it does not bring about their combination; mortar is necessary for their combination, but not sufficient (since it cannot bring about their combination), even though it connects them. My own understanding of the Great Kinds is that they *qualify* Forms and objects, and also *govern* connections between them. For instance, vowels fit 'q' and 'r' together in some words, but also, do not allow alternative combinations. Like the vowels, the Great Kinds impose conditions of fit on the other Forms, and enable the implementation of these conditions by the Forms, by *permeating* the Forms.

¹⁶ The reader might find helpful to read further in relation to second way, e.g., Mary-Louise Gill, 'Method and Metaphysics in Plato's *Sophist* and *Statesman*', *The Stanford Encyclopedia of Philosophy* (Spring 2020 Edition), Edward N. Zalta (Ed.), <https://plato.stanford.edu/archives/spr2020/entries/plato-sophstate/> especially section 5.4.

the metaphysics of how the Forms qualify things (see section 4.3 in chapter 4):

[. . .] nothing else makes that thing beautiful other than the presence of, or the communion with the Beautiful, or however you may describe it; for I do not have a firm view on how this comes about [. . .] (100d4–6, slightly modified translation)

[. . .] οὐκ ἄλλο τι ποιεῖ αὐτὸ καλὸν ἢ ἡ ἐκείνου τοῦ καλοῦ εἶτε παρουσία εἶτε κοινωνία εἶτε ὅπη δὴ καὶ ὅπως †προσγενομένη [. . .]

Plato's original metaphysical intuition in the *Phaedo* develops into two different conceptions of overlap in his system, one which, *communion*, gets developed as *permeation*. The Great Kinds permeate other Forms, where these are other Great Kinds, or Forms; and they may extend to all there is, e.g., the Great Kind of Being over all that exists. Plato talks of the second type of overlap, *permeation*, in the following terms in *Sophist*:

Since, therefore, we are agreed that some of the classes will commune with one another, and others will not, and some with few and others with many, and that there is nothing to hinder some [e.g., the Great Kind of Sameness, or Being] from communing universally with all [. . .] (254b7–c1, translation slightly modified)

ὅτ' οὖν δὴ τὰ μὲν ἡμῖν τῶν γενῶν ὡμολόγηται κοινωνεῖν ἐθέλειν ἀλλήλοις, τὰ δὲ μή, καὶ τὰ μὲν ἐπ' ὀλίγον, τὰ δ' ἐπὶ πολλὰ, τὰ δὲ καὶ διὰ πάντων οὐδὲν κωλύειν τοῖς πᾶσι κεκοινωνηκέναι [. . .]

I will start with an example, to illustrate the point I want to make about *permeation* and its role 'beyond' qualification, in imposing necessary conditions of participation, in Plato's theory: the Great Kind of Sameness permeates all Forms, and hence, the Form of Sphericity; on account of this *permeation*, all partakers of the Form of Sphericity will necessarily jointly partake of the Great Kind of Sameness—they are all the same, *qua* spherical. Generalizing from the example, *permeation* (of Forms by Great Kinds) introduces *necessary conditions* which

govern participation in Forms/Great Kinds; thus, permeation determines the interdependence of qualifications of things, such as the necessary interdependence of sameness and sphericity in our example.

We will examine now the relevance of this development to our initial question about how Plato handles in his metaphysics (what we call) asymmetric relations. To do this, we need to return to the *Phaedo* and the discussion of comparative qualifications. If the size of Simmias is a , and the size of Socrates is b , where $a = b + c$ (as determined by their respective partaking in the Form of Magnitude (μέγεθος, see *Phaedo* 102c2, quoted earlier) then, necessarily, Socrates partakes of the Form of Smallness and Simmias partakes of the Form of Largeness. However, their partaking of the Form of Smallness and the Form of Largeness respectively, does *not* as such make Socrates smaller than Simmias. Socrates and Simmias need to partake of the Form of Smallness and the Form of Largeness *πρὸς* one another, for the one to be smaller *than* the other. This requirement cannot be satisfied by their jointly participating in a Form, because they participate in *different* Forms—of Smallness and of Largeness. Therefore, a different type of plural partaking is in play here, for comparatives, and more generally, for interdependent nonsymmetric qualifications. I call this type of plural partaking *parallel-partaking*: when an individual x participates in one of two opposite Forms (e.g., of Largeness), necessarily, this object is partaking of this opposite Form *in parallel with* another individual y partaking of the respective opposite Form (of Smallness) in this pair of opposites. Thus, in our example, if Socrates partakes of the Form of Largeness, necessarily, he is partaking of that Form *in parallel with* Simmias partaking of the Form of Smallness.¹⁷

To bring together the interpretative results achieved so far, we have examined *joint-partaking* in one and the same Form; *parallel-partaking*

¹⁷ A qualification is in place here: while I believe gives the best interpretation of the textual evidence, some of his claims give the impression that Plato thinks that partaking in opposite Forms, such as of Largeness and Smallness, has two functions: to account for a quantitative qualification (e.g., being 6 ft, if we take size here to be height), and for a comparative qualification (e.g., being taller). I will not explore the plausibility of this alternative reading here, other than say that I do not see how the latter can happen in the theory of Forms.

in different Forms; and *permeation*, which governs the *modality* of further partaking in Forms. An example of the latter is, e.g., if Socrates partakes of Form of Oneness, and Hippias partakes of the Form of Oneness, then necessarily they partake jointly of the Form of Duality/ Twoness. Plato does not say this explicitly, but it follows from his discussion of the Great Kinds: in order to explain that if x and y are each one, they are necessarily two together, we need to assume that the Form of Duality/Twoness permeates the Form of Oneness. (We will come back to this example in section 6.3). So, I submit that, generalizing, plural partaking is how the theory of Forms accounts for 'relations' (including asymmetric ones, such as comparatives), resulting in comparative and non-comparative qualifications of objects (e.g., being smaller than, being equal, etc.).

6.2.3. Multigrade 'relations'

I speculate that in Plato we find resources, not only to provide a relationless account of cases for which relations realists posit symmetric and asymmetric relations, but also, of what we call *multigrade relations*.¹⁸ Fraser MacBride (2016) provides some examples of multigrade relations:

Putative examples include causal, biological, physical, geometrical, intentional and logical relations. Causation appears to be multigrade because a certain number of events may be required to bring about an effect on one occasion, and a different number of events may be required to bring about an effect on another. Similarly, entailment appears to be a multigrade relation because a certain number of premises may be required to entail one conclusion but a different number of premises to entail another.

¹⁸ The expression is from Leonard and Goodman (1940: 50). Whether there are any multigrade relations is a contentious issue. Among modern philosophers, e.g., Armstrong (1978b: 93–4, 1997: 85, 2010: 23–5) argues against them whilst MacBride (2005: 569–93) argues for them.

Multigrade relations have become the object of study in contemporary philosophy of logic, posing a challenge for the traditional Russellian account of relations. Traditionally, relations are defined in logic by their kind, and by the number of argument-places they have. Let us compare the claim 'Mary loves John' and the claim 'Mary loves John and Jack'. The former involves a two-place relation, while the latter a three-place relation; if the number of argument-places of a relation enters the definition of a relation, then '_loves_' is a different type of relation from '_loves_ and _'; but this appears to be a counterintuitive outcome. The way some logicians have proposed to address the issue is by denying that all relations are defined by both their kind and the number of argument-places they have, and positing that some relations (those called multigrade ones) are defined by their kind only. In contemporary philosophy, Adam Morton (1975), among others, has shown how one can reason in logic using multigrade relations, namely, with predicates that do not have a determinate number of argument-places, and can thereby deal with two, three, or an indeterminate number of places (as in, e.g., 'the police are engaged in keeping the city safe'). This was a breakthrough in contemporary philosophy of logic; but, I submit, one that Plato had anticipated in his metaphysics.

Within Plato's system, putative multigrade relations can be handled through joint-partaking. Let us take the predicate 'being equal', as used in a relational statement. The qualification of being equal applies irrespective of the number of entities involved in the comparison: two things may be equal to one another, or equal to three, or to many. The relations realist would posit a multigrade relation as truth-maker for such a relational statement. Plato, on the other hand, would not need to expand his ontology; joint-partaking would be his way forward. If, e.g., three things are equal to one another, they jointly partake together in the Form of Equality/the Equals; if there is a fourth thing that is equal to them, then all four jointly partake in the Form of Equality/the Equals; etc. Joint-participation facilitates the sharing of a single part of a Form by two, or three, or four, etc., partakers, which become jointly qualified as equal with one another.

6.3. Necessity as plural partaking

Necessarily the Form of, e.g., Beauty is different from everything else in Plato's world. What does this mean, in Plato's metaphysics? Whereas later philosophers explain such necessity as analytic necessity, which holds logically between concepts or definitions, we will see that Plato explains it metaphysically, as determined by the Forms. How did Plato discover this type of necessity in the first place? I submit by means of his study of mathematics and geometry (which we touched upon already in section 3.4 of chapter 3). In the *Phaedo*, Plato mentions as examples of necessary connections between properties the case of 'being fire' and 'being hot', and that of 'being two' and 'being even' (105a); the latter example gives us an important clue. In the *Hippias Major*, Plato recognizes that 1 plus 1, without further ado, makes 2; e.g., Socrates and Hippias are qualified as two on the basis of each of them being one (301d). Plato additionally recognizes that the number 2 is even (302a). So, that 1 plus 1 makes 2 is a necessary condition governing these numbers, and is accounted for (in the *Sophist's* ontology) by the fact that the Form of Twoness/Duality permeates the Form of Oneness; similarly with being even, which is a necessary quality of some numbers, such as 2, and is accounted for by the Form of Evenness permeating the Forms of even numbers. To generalize: Plato realizes that numbers are governed by a type of necessity which he understands as being metaphysically grounded. I submit that he holds the same about Forms: they too are similarly governed by necessity.

Further, in the *Sophist* the Great Kinds reify two types of necessary conditions the Forms obey: the first type of necessary condition concerns the way that Forms *operate* (just as in the case of numbers), i.e., the patterns of necessary participation of sensible objects in the Forms; and the second concerns the *nature* of Forms, i.e., the necessary participation of Forms in other Forms. By permeating other Forms, the Great Kinds set necessary patterns of partaking of individuals in Forms, and qualify other Forms with necessary properties (e.g., the Form of Beauty is necessarily self-same). Let

us consider an example, concerning the first type of necessity: if an object is red, it is thereby *necessarily* similar to any other object that is red. Can the theory of Forms explain this, and if yes, how? I have shown in section 6.2.2 that if an object partakes of the Form of, e.g., Redness, *ipso facto* it partakes of the Great Kind of Sameness jointly with any other object that partakes of the Form of Redness. Other examples are, e.g., two things that are triangular are necessarily *jointly qualified* as the same (in shape); two things of different size are necessarily *qualified in parallel* as large and small. This necessity, for Plato, also governs arithmetical examples, e.g., any object which is one, thereby, partakes jointly in the Form of Duality/Twoness together with any other object that is one. The second type of necessity that Plato reifies in the realm of Forms concerns their *nature*, rather than operation: for instance, every Form partakes of the Great Kind of Being. This necessity is different from the former one, in that it sets necessary patterns of participation *of Forms in other Forms* (e.g., of Oneness and Twoness/Duality, see also section 6.2.2), rather than necessary patterns of participation of sensible particulars in the Forms.

Thus, the Great Kinds, by permeating other Forms, govern the patterns of participation in these Forms, by enforcing various types of necessary participation, which we can summarize thus:

- a) *Necessary individual-partaking*: e.g., the Great Kind of Oddness permeates the Forms of odd numbers, e.g., the Form of Threeness; so that anything that partakes, e.g., of the Form of Threeness, necessarily also partakes of the Form of Oddness.
- b) *Necessary joint-partaking*: e.g., the Great Kind of Sameness permeates every Form, so that if anything partakes of a Form F, it necessarily jointly partakes of Sameness together with every other individual partaking of the Form F. So, e.g., two things that partake of the Form of Triangularity, necessarily jointly partake of Sameness.
- c) *Necessary parallel-partaking*: e.g., two things of different size necessarily partake in parallel, respectively, of the Forms of Largeness and Smallness.

6.4. Regresses of Great Kinds

In the *Sophist*, Plato shows much philosophical depth and sophistication, addressing questions nobody had broached in the history of metaphysics before him. Interestingly, however, Plato does not develop his account of the Great Kinds further, beyond the *Sophist*. Why? My conjecture is that he realizes that the Great Kinds introduce new problems, just as they solve problems in his metaphysics.

One set of difficulties the Great Kinds generate concerns the two metaphysical roles that they need to serve within Plato's system, which he does not tease apart. One role is that of *qualifying*: Forms and sensible things alike, which partake of the Great Kinds (e.g., of Being, or of Sameness) and thereby acquire qualifications (here, as existent, and as similar, respectively). The other role of the Great Kinds is that of *governance*: the Great Kinds permeate other Forms, thereby imposing participation patterns on the way sensible things partake of Forms and Forms of Forms. Plato does not distinguish, nor does he offer a metaphysical account of these two roles of the Great Kinds; and importantly, he does not distinguish between the two alternative ways in which first-order Forms and second-order Forms are 'entangled': by partaking, and by permeation.¹⁹ Further, Plato leaves unaccounted for how permeation sets patterns of necessary participation; we know nothing more than that Great Kinds govern Forms.

A second set of difficulties concerns the regresses that arise from positing the Great Kinds. These regresses are not vicious; but their proliferation undermines comprehension and explanation, which defeats the purpose of reifying the Great Kinds. One such regress is what we may call the *Sameness Regress* (see *Sophist* 256a).²⁰ Any two pairs of joint- or parallel-partakers of the Great Kind of Sameness are the same. For example, two spheres jointly partake of Sameness, and two

¹⁹ What Plato does is to use different terms to describe the way the Forms and the Great Kinds are 'entangled', which, I take it, shows that he was searching for the appropriate metaphysical distinctions.

²⁰ Plato does not develop this regress in his text, but it is reasonable to assume he would have been aware of it.

triangles too jointly partake of sameness; thereby, these two pairs of joint-partakers are each same, which suffices for the two pairs to further partake together of Sameness and become, together, qualified as same; and so forth. Regressive infinities of plural partakers emerge from *any* pairs of partakers of Sameness. The joint-partaking will be of infinitely increasing internal complexity, as the layers of joint-participation build up, endlessly. (Similar regresses develop with other Great Kinds, e.g., we could derive a *Difference Regress*.)

Such regresses do not multiply the Great Kinds (contrary to what the TBA and TMA do, multiplying the Forms); rather, they multiply the qualifications of sensible things, to the point of unintelligibility. The outcome undermines the explanatory utility of the Great Kinds. If we think of the *Sophist* as Plato's exploration of how the Great Kinds could have enriched his system and provided answers for the metaphysical questions that his theory of (first-order) Forms had left unaddressed, we need to conclude that the attempt was not successful. The introduction of the Great Kinds within the ontology of Forms generates a 'maze' of overlaps between Forms, Great Kinds, and sensible things. In the *Sophist*, Plato has literally built up a 'metaphysical edifice' of Forms and Great Kinds comprising structured qualifications governed by necessity, which in his own words is described thus:

[. . .] one form extending entirely through many individuals each of which lies apart, and [. . .] many forms differing from one another but included in one greater form, and again [. . .] one form evolved by the union of many wholes, and [. . .] many forms entirely apart and separate. This is the knowledge and ability to distinguish by classes how individual things can or cannot be associated with one another. (253d5–e2)

[. . .] μίαν ιδέαν διὰ πολλῶν, ἐνὸς ἐκάστου κειμένου χωρίς, πάντη διατεταμένην ἱκανῶς διαισθάνεται, καὶ πολλὰς ἑτέρας ἀλλήλων ὑπὸ μιᾶς ἔξωθεν περιεχομένας, καὶ μίαν αὖ δι' ὅλων πολλῶν ἐν ἐνὶ συνημμένην, καὶ πολλὰς χωρὶς πάντη διωρισμένας· τοῦτο δ' ἔστιν, ἥ τε κοινωνεῖν ἕκαστα δύναται καὶ ὅπη μή, διακρίνειν κατὰ γένος ἐπίστασθαι.

The Great Kinds introduce structure in the patterns of participation of things in properties; but, as Plato realizes, now structure 'runs amuck' among the Forms.

6.5. Building the *paradeigma*

The *Sophist* is a metaphysical *tour de force* that must have nevertheless left Plato wanting. Plato does not tell us this, nor does he tell us what is missing from the metaphysics he proposes in the *Sophist*; but we can work this out for ourselves, once we discover the uncontrollable regresses sprouting among the Forms and the Great Kinds, which I outlined in the previous section of this chapter. The quotation concluding the preceding section shows us that already within the *Sophist*, Plato realizes that the 'metaphysical edifice' he has built has become unworkably complex. On account of the metaphysical shortcomings of the *Sophist*, I submit that Plato was led to a radical reconception of the Forms in the *Timaeus*. What's new there?

On my interpretation, Plato moves out of the metaphysical 'maze' emerging in the *Sophist* by giving up in the *Timaeus* the idea that there are (second-order) Forms permeating (first-order) Forms. He merges the multiplicity of individual Forms he had introduced in various dialogues into the so-called *paradeigma* (παράδειγμα), a single *über-Form* we might say. The *Sophist* is a metaphysically valiant, extraordinarily innovative, but abortive attempt to explain all there is 'piecemeal', as it were; in the *Timaeus*, as we will see, the *paradeigma*, by contrast, comes 'in one piece'. The *paradeigma* is a single entity that comprises all the Forms *in a single structure*. It embodies *all* the metaphysical overlaps (interpermeations) between Forms and Great Kinds, rather than reifying them one by one, and therefore, blocks all regresses arising from the reification of the overlaps of the Forms and the Great Kinds. The way Plato achieves this result by means of the *paradeigma* is at the expense of explanatory power—it is a type of Wittgensteinianism, whereby Plato blocks resemblance regresses (such as the *Sameness Regress*) by not reifying, and hence not explaining, resemblance, save through the *Demiurge's* creative operations. In crafting what there is in the world, the *Demiurge* selects which aspects of the *paradeigma*

to copy.²¹ Partaking is now *by imitation*, rather than by constitutional overlap; more on this in the chapter to come.

6.6. Closing remarks

In this chapter I argued that for Plato there are only *ways the world is qualified*, and that being related (in symmetric or nonsymmetric ways) is for him possessing a qualification, that is, partaking in Forms, jointly or in parallel with something else. Plato accounts for all types of qualification by constitutional overlap, thus enriching Anaxagoras's original metaphysical model with novel types of partaking: *joint*- and *parallel*-partaking. Further, Plato discovers that some joint and parallel qualifications are *necessary*; thus, overlap *qualifies*, but also *regulates* (by means of the permeation of the Forms by the Great Kinds) patterns of necessary co-qualification. Accounting for these necessary patterns is, in effect, reifying necessity in the world of Forms. Plato achieves this by introducing an extra tier of Forms, the Great Kinds. He however does not develop this line of thinking further, after the *Sophist*. I argued that this must be because he must have realized that the Great Kinds introduce many problems in his system, such as what I call the *Sameness Regress*, just as they solve problems. We will see in chapter 7 that in the *Timaeus* Plato will overcome this impasse by introducing the 'ontological successor' of the Forms and the Great Kinds, namely the *paradeigma*.

Appendix: Reifying relatives: the Forms of Master and Slave

I will engage here with the most recent published work relevant to my argument that Plato's ontology is relationless, that of Matthew Duncombe (2020).

²¹ The depersonalization of Anaxagoras's *nous* (transformed in Plato's system in the metaphysical *ensemble* of the *Demiurge*, the Form of the Good, and the *paradeigma*), and the introduction of the *receptacle* for the instantiation of Forms in the world, are further departures from Anaxagoras, neither of which, however, I discuss in depth in this book.

Our views are radically different, and this is why I believe it will be helpful for the reader to outline where we disagree and for which reasons. Duncombe's assumption is that relatives are objects (2020: 11 and 15) but not ordinary ones; they are objects that are *constituted by* the relevant relation (2020: 15). Duncombe calls the view that there are objects thus constituted by relations *constitutive relativity*. Constitutive relativity entails relations realism. In so far as Duncombe attributes constitutive relativity to Plato, our views are diametrically opposite. His overall thesis is that,

Plato, Aristotle, Stoics, and Sceptics share a broadly constitutive view of relativity [. . .] Their reflections on relativity begin by asking what it is to be a given relative.²² Not only that, but the relative does not simply have a relation, it is constituted by that relation. (2020: 247)

Duncombe assumes Plato endorses constitutive relativity because Plato uses relational *language*;²³ however, I explain Plato's relational language through the metaphysical theory Plato has developed for all properties, which include relational, structural, and contextual relatives. Duncombe argues that,

[. . .] Plato has a constitutive view of relativity, *with an inference to best explanation*: key formal features of constitutive relativity are [according to Duncombe] exclusivity, reciprocity, aliorativity, and existential symmetry [as Duncombe has described them pp. 15–9]; Plato's texts rely on such formal features; so, Plato at least *tacitly endorses* constitutive relativity (2020: 21, my emphasis; see also p. 247 for the same argument with an inference to best explanation).

I argue that Plato assumes a constitutive view of relativity by showing that the formal features of constitutive relativity are present²⁴ across his writings [. . .]. (2020: 23)

Duncombe concludes *with an inference to best explanation* that Plato is committed to a metaphysics of relations and a relational account of relatives; I concluded that Plato does not reify relations, but explains such talk in terms of types of constitutional overlap. I argued that the main reason why Plato, and more generally ancient metaphysicians, did not reify relations is that, if what relations do is to qualify things, we do not need them in addition to (monadic) properties; if relations per hypothesis did more than qualify, this would be metaphysical magic. I tried to show why our contemporary account of relations, which qualify and additionally also relate, and which, if asymmetric,

²² For starters, I don't see reasons to make this move: asking what it is to be a given relative does not amount to reifying it into an object. If Duncombe wants to attribute the latter metaphysical stance to Plato (and the others) he needs to do more to motivate the move.

²³ See (2020: 247 and *passim*) for a statement of Duncombe's methodology.

²⁴ In the language, rather than in the ontology, I contend.

qualify differently each relatum, is magic. We will not find arguments in the ancient texts specifically against this magic, but nor will we find this magic in their ontologies. The explanation that Duncombe's interpretation of Plato should but does not offer, is how relations or ontological dependence is reified in the theory of Forms. Let us consider the Forms of Slave and Master, which are relatives: what underpins, in Plato's ontology as interpreted by Duncombe, the interdependence between them, i.e., their mutual relativity that renders them relatives? *Ditto* for the case of qualifications such as 'smaller' and 'larger'. Duncombe does not tell us. I addressed this problem in the present chapter, and argued that Plato does not give us any ontological tools that would justify the reification of relations in the theory of Forms. Let me add that I do not think that Plato gave us the 'definitive' account of a relationless metaphysics; I also believe that there is good reason why philosophers today believe in Russellian types of relations, despite the difficulties that such entities face—ontological dependence of any type is a hard problem to address. What I am urging is that we investigate further the pathway opened by Plato with the idea of overlap, for understanding better the metaphysics of ontological dependence.

7

The *paradeigma* shift

7.1. Introduction

Building on the arguments put forward in chapter 6, this chapter develops and defends the interpretation that in the *Timaeus* (that is, towards the end of his metaphysical ‘journey’)¹ Plato introduces the so-called *paradeigma* to solve the metaphysical *impasse* the Great Kinds had generated in the *Sophist*. I will argue that by introducing the *paradeigma* Plato reifies structure into a single *über*-Form, as we might call it, that replaces all the others and their interconnections, in the sense that it embodies them. The *paradeigma* is all the Forms, which are now primitively structured, as qualitative aspects of a single Form. This move enables Plato to overcome the *impasse* of the *Sophist*, because structure in the *Timaeus* is posited to embody numerous ‘interminglings’ of Forms which would otherwise have to be accounted for by exceedingly many and complex plural partakings.

I will also argue that this radical change in Plato’s conception of the Forms brings about an equally significant change in his account of participation. We saw that constitutional overlap is for both Anaxagoras and Plato (pre-*Timaeus*) the ‘mechanism’ that accounts for property qualification, and dovetails with the *Contagion Principle*, according to which something acquires the property it has from a source that is also qualified by that property. We saw that structural Forms posit a challenge for Plato in relation to this explanatory model. Can participation in parts of a structural Form ‘transmit’ the structural property of the Form to the partaking object? As we saw in section 4.8 of chapter 4, if

¹ I assume the *Timaeus* to be among the latest of Plato’s works, with the mainstream of the scholarly tradition, and against, e.g., G. E. L. Owen (1953). My reasons are philosophical; the one relevant here concerns the relation between Plato’s position in the *Timaeus* and the TMA, which I will introduce later in the chapter.

parts of the Form are conceived quantitatively, they cannot 'transmit' structural properties; if functionally, they can. But functional parts multiply the Forms, and this is unacceptable to Plato, as the TBA shows (as per our analysis in section 4.5 of chapter 4). This is why Plato comes to endorse a new explanatory 'mechanism' for property qualification, that is, *imitation*, and moves from *constitutional* to *qualitative* overlap (as anticipated in section 4.1).

Qualitative overlap can be best explained using Aristotelian terminology, as similarity of form without material overlap between different entities qualified in the same way. Plato does not have the terminology or the concept of a 'universal', but this is not reason to think that he could not conceive of similarity without material overlap (i.e., in his system, the similarity between the *paradeigma* and things fashioned after it). We already know from, e.g., the *Parmenides*² and the *Republic*³ that there is an alternative account of participation in play in Plato's system, alongside constitutional overlap: *imitation*. According to this account, things in the world possess the properties they have by being *copies* of the Forms that stand for such properties. The Forms are perfect instances of the properties, while things in the world are imperfect copies of them. While Plato had this alternative metaphysical model, namely that of imitation, under consideration throughout his dialogues, it will not be until the *Timaeus* that he will make it his preferred one, after having tested the explanatory power of constitutional overlap and having found insurmountable difficulties with it. In the *Timaeus*, Plato enriches the imitation model by introducing the operation of a divine agent, the *Demiurge*, to implement imitation. As we will see, the *Demiurge* and other semi-gods *copy* the *paradeigma* so as to qualify the individuals they generate in nature with (selected) properties of the *paradeigma*.⁴ Imitation is a metaphorical (and metaphysically

² See, e.g., the *Parmenides*: '[. . .] what appears most likely to me is this: these forms are like patterns set in nature, and other things resemble them and are likenesses of them; and this partaking of the forms is, for the other things, simply being modeled on them' (μάλιστα ἔμοιγε καταφαίνεται ὥδε ἔχειν: τὰ μὲν εἶδη ταῦτα ὥσπερ παραδείγματα ἑστάναι ἐν τῇ φύσει, τὰ δὲ ἄλλα τούτοις εἰκέναι καὶ εἶναι ὁμοιώματα, καὶ ἡ μέθεξις αὐτῇ τοῖς ἄλλοις γίνεσθαι τῶν εἰδῶν οὐκ ἄλλη τις ἢ εἰκασθῆναι αὐτοῖς, 132d1–4).

³ In the TBA, *Republic* 597c.

⁴ As noted in previous chapters, the *Demiurge* and the semi-gods have a role that is comparable to that of the cosmic vortex in Anaxagoras' ontology: the vortex generates a preponderance of Opposites, which qualify objects with the respective properties, while

opaque) way of accounting for participation; but when Plato comes to see constitutional overlap as an untenable account of participation, he replaces it with the only alternative he has, that is, imitation. Metaphysically speaking, neither imitation nor the *Demiurge's* operations are improvements on the original Anaxagorean model, in terms of how to account for property possession. On the other hand, what Plato is seeking is an account of structure; and finally, in the *Timaeus* he is in the position to offer one—even if the solution is not problem-free, as I will show.

One might want at this point raise the question of why Plato feels entitled to continue using the term μετέχειν after the *Parmenides*, in the *Sophist* and the *Timaeus*, despite having abandoned the original Anaxagorean version of *overlap by parts*. I believe the answer is twofold: because the way μετέχειν was used by his predecessors already allowed for different ways to overlap;⁵ but also

the *Demiurge* and semi-gods copy the world of Forms to qualify the individuals they generate in nature.

⁵ One generation before Anaxagoras, the poet Theognis uses μετέχειν to say that *x* and *y* have parts of *z*. This is what Anaxagoras advocates in his system (all hot things have parts of the Opposite Hot (in preponderance), and Plato, pre-*Timaeus* (all hot things have parts of the Form of Heat). Theognis writes:

Few comrades, son of Polypaus, wilt thou find worthy thy trust in difficulties,
such, to wit, as would be of one mind with thee and suffer to share evenpoise in
thy good fortune and thy bad.

Παύρους εὐρήσεις, Πολυπαῖδη, ἄνδρας ἐταίρους
πιστοὺς ἐν χαλεποῖς πρήγμασι γινομένους,
οἵτινες ἂν τολμῶιεν ὁμόφρονα θυμὸν ἔχοντες
ἴσον τῶν ἀγαθῶν τῶν τε κακῶν μετέχειν.

The expression μοῖραν μετέχειν, in particular, recurs also in other authors, such as, e.g., Herodotus, Aeschylus, Aristophanes, Lysistratus, Democritus, etc., where its meaning (in the variants μοῖραν/μέρος μετέχειν) is 'sharing something with somebody' and not specifically 'sharing a part of something with somebody/thing'. (Fritz-Gregor Hermann (2007) notes that the suffix μετά does not change the meaning of the verb ('to have' in the case of μετά + ἔχειν), and that the difference between the compound verb and the simple verb 'lies in the notion that there is somebody "with whom" one "has" or "has of" something'. See, e.g., Hermann: 'The Greek verb μετέχειν denotes a state or even of "sharing" [...] but unlike the Latin *parti-cipio*, derived from *pars*, "part", and *cipio*, "take", neither μεταλαμβάνειν nor μετέχειν is inherently or necessarily connected with μέρος or any other Greek word for "part" (2007: 23); and "The main difference in meaning between the simplex ἔχειν and the prefix μετέχειν lies in the notion that there is somebody "with whom" one "has" or "has of" something' (2007: 26).) Thus my suggestion is that μετέχειν, μοῖραν μετέχειν, and μέρος μετέχειν are ways to express in ancient Greek what I call in

for a significant philosophical reason, that overlap is a metaphysically more fundamental notion than parthood. Anaxagoras conceives of overlap only by parts; Plato differs from him in coming to understand that overlap does not presuppose the mediation of parthood; a thing can share, constitutionally, in the Form it partakes of, whether it shares with it a part, or not, but they merely overlap (e.g., sharing Cambridge parts). I argue that the difference between Anaxagoras and Plato lies in the fact that for Anaxagoras *parthood is more primitive than overlap*, whilst for Plato, *overlap is more primitive than parthood*.

One more question that remains unanswered in Plato's system, pre-*Timaeus*, concerns the metaphysics of the partakers, i.e., the sensible particulars in nature. We saw that Anaxagoras reifies only certain 'partakers' of properties in relation to life: the seeds, which are non-uniform structures; but he does not reify any other types of seed, e.g., for proportions of Opposites, as in earth. Does Plato conceive of individuals as bundles of properties, namely, merely com-present parts of Forms; or does he reify on his ontology subjects of properties? While Anaxagoras's Opposites exist in nature as physical entities, whether partaken or not, Plato's Forms are transcendent and become part of the furniture of the world only when partaken; in this sense belonging to a partaker 'instantiates' them.⁶ Thus Plato needs partakers in his system. Before the *Timaeus*, Plato does not reify subjects of properties for individuals in nature; but we do find reified subjects in the *Timaeus*. It remains unclear whether pre-*Timaeus* Plato simply assumes that there are partakers in nature—as if 'ghost' entities, unaccounted for in his ontology—without explicitly reifying them; or whether he has some (unsatisfactory) conception of subjects of properties—which would be the bundles of the parts of Forms in nature. In the *Timaeus*, Plato is the first in the history of Western metaphysics to reify bare particulars; he introduces, at 51a1–b2, the

this book a relation of 'overlap' between two or more entities: overlap covers both sharing of parts and also sharing in other possible ways, and thus is an apt term to use to describe both Anaxagoras's and Plato's theory of property distribution.

⁶ See Marmodoro, 'Instantiation' (unpublished).

so-called *receptacle* (ὑποδοχή). The *receptacle* is conceived of by Plato as space, which exists independently of the Forms and their parts in things, bearing no properties of its own, as per 52a7–b5.

This chapter focuses on some of Plato's metaphysical innovations of in the *Timaeus*, discussing selectively only those that are most relevant to the overarching argument of the book. I will examine the nature of the *paradeigma* Plato introduces in the *Timaeus*, the motivation for this metaphysical move, and the consequences that follow from it with respect to the theory of Forms and the metaphysics of participation. I will argue that to resolve the TMA Regress, Plato needs an *unmoved mover* in his ontology; the *paradeigma* supplies it. The *paradeigma* is an unmoved, but not an inert mover; in other words, it has causal powers of its own, and it exerts causal efficacy.⁷ Plato remains faithful to his own *Eleatic Principle* (see section 3.2 of chapter 3), with the *paradeigma* satisfying the requirement of being powerful. The powers of the *paradeigma* are *normative*, and through the mediation of the *Demiurge*, also *constitutive*. The *Demiurge* is an agent who comprehends the goodness of the *paradeigma* and copies it. His mediation is a metaphysical 'mechanism' whose end result is 'bringing this universe to completion in such a way that it, too, would have that character to the extent that was possible' (τόδε τὸ πᾶν οὕτως εἰς δύναμιν ἐπεχείρησε τοιοῦτον ἀποτελεῖν, 37d1–3). So, the *paradeigma*'s normative powers result in the universe having the character it has.⁸ In this sense, the *paradeigma* is also *constitutively* efficacious on the world.

⁷ The continuities and discontinuities between Anaxagoras's *nous*, Plato's *Demiurge*, and Aristotle's unmoved mover are to be explored in future work.

⁸ Plato offers some explanation of the normativity of the *paradeigma*, by praising the goodness of the *Demiurge* and of the *paradeigma* (see 28a–b). The beauty and goodness of the *paradeigma*, which motivate the copying activity of the *Demiurge* (see also 29a–b), is comparable to the power of Aristotle's *unmoved mover*, which is loved by the cosmos it moves (see *Metaphysics*, 1072a26–b3). However, Aristotle's account of the *unmoved mover* introduces no intermediary such as a *Demiurge*; and while the *unmoved mover* is assumed to have *normative power* on the world, on account of the love the world has for it, no metaphysical explanation of the nature of this love is given by Aristotle.

7.2. The *Third Man Argument* resolved

One of the salient features of the *paradeigma* as Plato presents it, is that it consists of *pure being*, devoid of any trace of becoming, whilst becoming is strictly confined to the natural world only:

As I see it, then, we must begin by making the following distinction: What is *that which always is* and has no becoming, and what is *that which becomes* but never is? The Former is grasped by understanding, which involves a reasoned account. It is unchanging. The latter is grasped by opinion, which involves unreasoning sense perception. It comes to be and passes away, but never really is. Now everything that comes to be must of necessity come to be by the agency of some cause, for it is impossible for anything to come to be without a cause. (27d5–28b6)

Ἔστιν οὖν δὴ κατ' ἐμὴν δόξαν πρῶτον διαιρετέον τάδε· τί τὸ ὄν αἰεί, γένεσιν δὲ οὐκ ἔχον, καὶ τί τὸ γιγνόμενον μὲν αἰεί, ὄν δὲ οὐδέποτε; τὸ μὲν δὴ νοήσει μετὰ λόγου περιληπτόν, αἰεὶ κατὰ ταῦτα ὄν, τὸ δ' αὖ δόξῃ μετ' αἰσθήσεως ἀλόγου δοξαστόν, γιγνόμενον καὶ ἀπολλύμενον, ὄντως δὲ οὐδέποτε ὄν. πᾶν δὲ αὖ τὸ γιγνόμενον ὑπ' αἰτίου τινὸς ἐξ ἀνάγκης γίγνεσθαι· παντὶ γὰρ ἀδύνατον χωρὶς αἰτίου γένεσιν σχεῖν.

Is this new? Has Plato not asserted the same, several times in other dialogues, about all Forms? Yes, he has. However, Becoming had come into the world of Being 'through the back door' as it were, because of a flaw in the *Contagion Principle*, revealed in the *Parmenides*. As we saw in section 5.5 of chapter 5, although the *Contagion Principle* is posited to explain the causal origin of being *f*, for any property *f* and anything that is *f*-qualified, in fact it fails to explain the causal origin of any of the sources of *f*-ness it introduces. Thus, if all instances of, e.g., cold in nature derive from the Form of Cold, and if the Form of Cold is itself an *instance* of coldness, which is true for Plato, then the causal origin of the source's (i.e., the Form's) coldness, too, needs to be explained. If it is explained by the *Contagion Principle*, a regress of sources *à la* TMA follows. Generalizing, the principle of causal explanation that the theory of Forms is committed to introduces becoming-*f* for each Form

F. Therefore Plato needs to excise becoming from the world of Forms. He does this in the *Timaeus*. The divide between Being and Becoming has never been as sharp in Plato's work as it is here. In the *Timaeus*, Plato concludes (on pain of the TMA), that this divide is necessarily as sharp as he posits it to be. He is very emphatic about the Being-Becoming divide, thus indicating the significance it has in his novel metaphysics. Plato's words leave no doubt in the reader's mind that the *paradeigma*, the eternal being, is conceived as free of any kind of becoming. In a prescriptive tone, Plato writes about the *paradeigma* that,

[. . .] 'was' and 'will be' are Forms of time that have come to be. Such notions we unthinkingly but incorrectly apply to everlasting being [the *paradeigma*]. For we say that it *was* and *is* and *will be*, but according to the true account only 'is' is appropriately said of it. 'Was' and 'will be' are properly said about the becoming that passes in time, for these two are motions. But that which is always changeless and motionless cannot become either older or younger in the course of time—it neither ever became so, nor is it now such that it has become so, nor will it ever be so in the future. And all in all, none of the characteristics that becoming has bestowed upon the things that are borne about in the realm of perception are appropriate to it. These, rather, are Forms of time [. . .] And what is more, we also say things like these: that what has come to be *is* what has come to be; that what is coming to be *is* what will come to be; and that what is not *is* what is not. None of these expressions of ours is accurate. (37e4–38b3)

[. . .] τὸ τ' ἦν τὸ τ' ἔσται χρόνου γεγονότα εἶδη, ἃ δὴ φέροντες λανθάνομεν ἐπὶ τὴν αἰδίων οὐσίαν οὐκ ὀρθῶς. λέγομεν γὰρ δὴ ὡς ἦν ἔστιν τε καὶ ἔσται, τῇ δὲ τὸ ἔστιν μόνον κατὰ τὸν ἀληθῆ λόγον προσήκει, τὸ δὲ ἦν τὸ τ' ἔσται περὶ τὴν ἐν χρόνῳ γένεσιν ἰοῦσαν πρέπει λέγεσθαι—κινήσεις γάρ ἐστων, τὸ δὲ αἰεὶ κατὰ ταῦτα ἔχον ἀκινήτως οὔτε πρεσβύτερον οὔτε νεώτερον προσήκει γίνεσθαι διὰ χρόνου οὐδὲ γενέσθαι ποτὲ οὐδὲ γεγονέναι νῦν οὐδ' εἰς αὖθις ἔσεσθαι, τὸ παράπαν τε οὐδὲν ὅσα γένεσις τοῖς ἐν αἰσθήσει φερομένοις προσήγεν, ἀλλὰ χρόνου ταῦτα [. . .] καὶ πρὸς τούτοις

ἔτι τὰ τοιαύδε, τὸ τε γεγονὸς εἶναι γεγονὸς καὶ τὸ γιγνόμενον εἶναι γιγνόμενον, ἔτι τε τὸ γενησόμενον εἶναι γενησόμενον καὶ τὸ μὴ ὄν μὴ ὄν εἶναι, ὧν οὐδὲν ἀκριβὲς λέγομεν.

I submit that one of the most significant metaphysical functions the *paradeigma* plays within Plato's system is to provide a solution to the TMA regress. In so arguing, I make a radical departure from how both the *paradeigma* and the TMA have been interpreted so far. It is not feasible within the present chapter to pay justice to the variety of alternative approaches and interpretations that exist in the literature concerning the *paradeigma* and the TMA; I will have to limit myself here to articulating the novelty of what I am proposing, and to contrast it with one representative alternative view in the scholarly literature, that of Donald Zeyl and Barbara Sattler (2017). Zeyl and Sattler do connect (as I do) the *paradeigma* and the TMA; however, their understanding of the TMA leads them to a counterintuitive interpretation the *paradeigma*. Zeyl and Sattler (2017) write that,

It is debatable whether Plato's middle-period metaphysics included the view that Forms were, or exhibited, some grander, unalloyed version of some of the properties exhibited by sensible objects. Arguably such a view (call it 'crude paradeigmatism') was refuted by the 'Third Man' argument of the *Parmenides*. (132a)

Several cogent arguments have been given the literature (especially in relation to the TMA) to the effect that Plato's Forms (pre-*Timaeus*) possess the properties they stand for; e.g. that the Form of Heat is self-predicationally hot.⁹ I lean on these arguments and want to add here that Plato assumes *Self-Predication* for the *paradeigma* too: the *Demiurge* copies the *paradeigma* to create sensible objects which resemble it. So, sensible objects possess the properties that characterize the *paradeigma*. I therefore disagree with Zeyl and Sattler, when they write that,

⁹ See section 4.7 of chapter 4 where I discuss the *Self-Predication Principle* within Plato's theory of Forms.

The necessity of a three-dimensional field in which the visible universe, as copy of its eternal model takes shape and subsists, determines the sense in which we should understand the universe to be an 'imitation' of its model. The imitative activity of the Craftsman is unlike that of a builder who replicates a larger- or smaller-scale three-dimensional structure as model, but like that of a builder who follows *a set of instructions* or schematics. That set is the intelligible, non-material and non-spatial model that *prescribes* the features of the structure to be built; it is not a structure itself. (my emphasis)

Zeyl and Sattler argue that the 'created' material objects could not have the very same properties as the immaterial *paradeigma*, because the *Demiurge* constructs the world in space, in time, and of matter, which are not properties of the *paradeigma* itself. Zeyl and Sattler see their view further supported by the following reasoning: the *paradeigma* (for them) is a *set of instructions*, which does not possess the properties which the instructions describe; so *Self-Predication* is not true of the *paradeigma*; and this is as it should be (they argue), since the *Self-Predication Principle* was proven untenable by the TMA. I argue to the contrary that the TMA does not refute the *Self-Predication Principle* as applied to the Forms. Zeyl's and Sattler's argument for their claim that TMA does refute the *Self-Predication Principle* rests essentially on their interpretation of the meaning of 'copy', where Plato writes that the *Demiurge* *copies* the *paradeigma*. As I mentioned, Zeyl and Sattler think that the *paradeigma* is a set of instructions for building the cosmos, and as such it does not embody the properties that characterize things in the cosmos. My reply is that this cannot be right, for the simple reason that it demotes the world of Being to being only 'programmatically' as it were, in relation to the world of Becoming. A set of instructions to build the cosmos is merely what the cosmos *could* be, and it *is* only when the cosmos has embodied the instructions. This turns Plato's metaphysical position on its head, rendering Being 'subservient' to Becoming. I take Zeyl's and Sattler's interpretation to be attributing a conceptual confusion to Plato, of which I find Plato innocent.

We have a further argumentative thread left open to pursue now. I claimed earlier that, with the TMA, Plato does not reject the

Self-Predication of Forms. Rejecting *Self-Predication* would have amounted to the rejection of the *Contagion Principle*, i.e., the rejection of the causal explanation of a qualitative condition in terms of the origin of that condition, which is the very principle driving Plato's conception of the Forms as sources of types of *f*-ness. However, if *Self-Predication* of Forms is *not* rejected, then the threat of regresses generated by the TMA remains, potentially undermining Plato's system in its entirety. Is, then, the *paradeigma* vulnerable to the TMA regress, if *Self-Predication* applies to it? For instance, if some part of the *paradeigma* is *f*, and the *Demiurge* makes *f*-things in the cosmos, are all these instances of *f*-ness copies of a further *paradeigma*₂ that the *Demiurge* looked at, which explains the things-*paradeigma* similarity, and so on to infinity? I argue that the TMA does not apply to the *paradeigma*. Positing the *paradeigma* blocks the TMA regress from ensuing, and amounts to an implicit rejection of the *Non-Identity Principle* of the TMA. The *paradeigma* blocks the regress, not because it is what it is in virtue of itself (rather than in virtue of something other, as *Non-Identity* would require); but rather, because the *paradeigma* is entirely free of Becoming. This makes (metaphysically) explicit what is implicit in the *Contagion Principle*: that a source of *f*-ness has never become *f*; a source of *f*-ness has no source of *f*-ness. As I argued in section 5.5 of chapter 5, that was the misguided assumption that allowed the TMA regress to get started. If a Form, e.g., of Largeness, needs to partake of another Form in order to be large, then the Form of Largeness *has become* large. My argument is that the expunction of Becoming from the world of Forms is a rejection, not only of the possibility that the *paradeigma* has become, but also that it could be posterior to a putative *paradeigma*₂ and dependent on it. Thus positing the *paradeigma* amounts to a rejection also, implicitly, of the *Non-Identity Principle* of the TMA, which requires the other-dependence of each Form *F* on infinitely many other Forms. This is the way Plato successfully blocks the TMA regress.¹⁰

¹⁰ My argument that the strict division between the worlds of Being and Becoming in the *Timaeus* is Plato's answer to the TMA in the *Parmenides* is a philosophical reason to place the *Timaeus* (contra Owen (1953) among his latest dialogues, whilst Owen places it early in Plato's career, judging the *Parmenides* to be a philosophically more mature work than the *Timaeus*.

7.3. Being, becoming, and time

In this section, I will briefly examine the relation of each of Plato's two worlds of Being and Becoming to time, within the context of the *Timaeus*. Plato's views on time have been discussed extensively in the scholarly literature,¹¹ except for one aspect, which is relevant to his (and *our*) metaphysics of powers, and is of special interest here because one of the lines of inquiry pursued in this book concerns Plato's *Eleatic Principle*, and the distinctive power ontology that Plato develops to tailor-fit his conception of the Forms.

In the *Timaeus* Plato tells us that the world of Being, identified as the *paradeigma*, is eternal; whilst the world of Becoming is temporal, measured by the eternal motion of time. How can we understand the difference between being temporal and being eternal on Plato's conception? I will put forward a suggestion. In a much-discussed passage of the *Timaeus*, Plato tells us that time is an image of eternity, which moves periodically (as an eternal clock) while *eternity remains a unity*:

So, as the Model was itself an everlasting Living Thing, he set himself to bringing this universe to completion in such a way that it, too, would have that character to the extent that was possible. Now it was the Living Thing's nature to be eternal, but it isn't possible to bestow eternity fully upon anything that is begotten. And so he began to think of making a moving image of eternity: at the same time as he brought order to the universe, he would make an eternal image, moving according to number, of eternity remaining in unity. This number, of course, is what we call 'time'. (37d1–7)

αὐτὸ [τὸ παράδειγμα] τυγχάνει ζῶον αἰδίδιον ὄν, καὶ τόδε τὸ πᾶν οὕτως εἰς δύναμιν ἐπεχείρησε τοιοῦτον ἀποτελεῖν. ἡ μὲν οὖν τοῦ ζῶου φύσις ἐτύγχανεν οὔσα αἰώνιος, καὶ τοῦτο μὲν δὴ τῷ γεννητῷ παντελῶς προσάπτειν οὐκ ἦν δυνατόν: εἰκὼ δ' ἐπενόει κινητὸν τινα αἰῶνος ποιῆσαι, καὶ διακοσμῶν ἅμα οὐρανὸν ποιεῖ μένοντος αἰῶνος

¹¹ To give here only some pointers in a vast literature, see, e.g., Sorabji (1983), Mohr (1986), and Zeyl and Sattler (2017).

ἐν ἐνὶ κατ' ἀριθμὸν ἰοῦσαν αἰώνιον εἰκόνα, τοῦτον ὄν δὴ χρόνον ὡ
νομάκαμεν.

So how are we to understand the *unity of eternity* that the *paradeigma* enjoys, if the *paradeigma* is eternal, bereft of the passage of time? I will put forward a suggestion by which *we* can understand the unity of eternity, wherein there is no flow of time; but I am not thereby claiming that Plato understood it this way. The reason why I supply such an account, even if it is not Plato's, is to show how philosophically stimulating the relevant lines about eternity in the *Timaeus* are. My thought is that the *paradeigma*'s unity of eternity may be conceptualized using McTaggart's B-series of time (or an even more recent conception of block-time for a four-dimensional spacetime unity).¹² On such conceptions of time, there is no flow or passing of time, but time is defined in terms of relations of simultaneity, before and after, which are all compresent, as spatial relations are. Among contemporary metaphysicians, Alexander Bird (2007), for instance, offers a conceptualization of the world (which is a world of powers only at the fundamental level) as a graph (2007: 139 ff), where time too is represented in terms of relations within the graph. In such a world, time and powers are understood in the way we conceive of the relation of one location in space to another location. Turning now to Plato: his *paradeigma* is strictly devoid of change or becoming; but (like Bird's fundamental entities) the *paradeigma* is powerful (the *Eleatic Principle* requires us to understand it that way) and time is in it, but it does not 'flow'.

7.4. Transcendent necessity

Even before Plato, cosmologists and philosophers alike had included necessity in their explanations of the cosmos. Sometimes, it was physical necessity, as in the case of the Atomists, while in others it was

¹² The interested reader might find accessible and useful the discussion of McTaggart's (1908) argument in Markosian (2016). As an example of a conception of block-time for a four-dimensional spacetime unity, see Cortes and Smolin (2014).

mathematical necessity, as in the case of Anaxagoras.¹³ Some reified physical forces, which operated deterministically as governed by necessity; others reified principles derived from axioms and mathematical reasoning, particularly in relation to oneness and infinity. Plato reifies transcendent necessity, in the realm of Being. He discovers transcendent necessity in the *Hippias Major*, as we saw in chapter 6, when he realizes that every pair of individuals possess necessarily the attribute of being two (individuals). This type of necessity is not restricted to mathematical examples, e.g., that of being two: Plato mentions, in the same context, the example of beauty, too (302c7–d2). However, in the *Hippias Major*, Plato is not yet explicit about his commitment to the Forms; he talks of *πάθη* (properties, attributes) jointly qualifying particulars. It is in the *Phaedo*, which I consider an early stage in Plato's development of his theory of Forms, that he describes the impact of this necessity on the Forms. In the *Phaedo*, he becomes explicit about transcendent necessity governing the Forms, where he notes that the Form of Fire brings the Form of Heat to whatever the Form of Fire takes possession of:

Would they [e.g., hot objects] be the things that are *compelled* by whatever occupies them not only to contain that thing's Form [of Fire],¹⁴ but also *always* that [Form] of some opposite [of Heat]? [The answer is in the positive] (104d1–3, my emphasis)

τάδε εἴη ἄν, ἃ ὅτι ἄν κατάσχη μὴ μόνον ἀναγκάζει τὴν αὐτοῦ ιδέαν αὐτὸ ἴσχειν, ἀλλὰ καὶ ἐναντίου αὐτῷ αἰεὶ τινος;

Plato, however, does not at this stage reify necessity in his ontology. As we saw in chapter 6, it is in the *Sophist* that he reifies the necessary conditions governing the Forms. The Great Kinds are Plato's (as we saw, ultimately unsuccessful) attempt to reify transcendent necessity

¹³ Anaxagoras derives ontological conclusions about the Opposites from his principle of there being no smallest of the small (e.g., B1); see section 1.5 of chapter 1.

¹⁴ Even if one believes that fire, in Plato's example in the *Phaedo*, is not a Form but a physical particular fire, nonetheless, the necessity by which the attribute of 'fire' brings with it the attribute of 'heat' is metaphysical, rather than physical necessity, pertaining to the nature of a fire.

in the world of Forms. I believe they represent an intermediate stage in Plato's thinking about how to reify necessity and how to address the difficulties that arise from this move. The next step is positing the *paradeigma* in the *Timaeus*, which embodies the complexity of the necessities governing the Forms. In chapter 6, I suggested that Plato must have seen that, despite the enormous and problematic complexity that the Great Kinds introduce into the system, they capture only partially the complexity of the necessities that govern the Forms. In positing the *paradeigma*, Plato innovatively builds necessity into an 'edifice' comprising all Forms, constituting the naturally most extensive body of being: the *paradeigma*. The *paradeigma* is *structured* by necessity, and is *qualified* by the Forms.

7.5. The *Demiurge* and the *paradeigma*

When in the *Timaeus* the *Demiurge* copies the *paradeigma* and 'creates' the world, the result is *qualitative overlap* between the world and the *paradeigma*. Does this shift in Plato's conception of overlap count as abandoning the original Anaxagorean model? The answer has to be 'Yes and No'. Plato does *not* abandon overlap in explaining how things are qualified by properties, even after he abandons sharing in parts of the Forms as the 'mechanism' for property possession. What Plato gives up is Anaxagoras's intuitive physicalistic conception of *constitutional overlap* between things and properties. This speaks for the *paradeigma* being powerful in a special sense, different even from the way in which the Forms are powerful, since there is no constitutional overlap between the *paradeigma* and the things in the world of Becoming; here, we need to understand the powerfulness of the *paradeigma* as *qualitative overlap*, rather than as *constitutional overlap* with things. Thus Plato at this point retains qualitative overlap between things and Forms by innovating on the 'mechanism' for property possession, which is now *by imitation* and facilitated by the *Demiurge*.

The metaphysical role of the *Demiurge* is complex in Plato's new theory. An important feature of the role of the *Demiurge*, to which I believe scholars have not given due attention so far, is its role in individuating the Forms. In constructing the world, the *Demiurge*

selects aspects of the *paradeigma* to copy; and then copies them; he selects the *paradeigma* because of its goodness, and copies it well:

[...] a craftsman looks at what is always changeless and, using a thing of that kind as his model, reproduces its Form and character, then, of necessity, all that he so completes is beautiful. (28a6–b1)

[...] ὁ δημιουργὸς πρὸς τὸ κατὰ ταῦτα ἔχον βλέπων αἰεὶ, τοιοῦτῳ τινὶ προσχρῶμενος παραδείγματι, τὴν ἰδέαν καὶ δύναμιν αὐτοῦ ἀπεργάζηται, καλὸν ἐξ ἀνάγκης οὕτως ἀποτελεῖσθαι πᾶν.

As I mentioned earlier in the chapter, the *paradeigma* is the totality of Forms ‘weaved together’ into what we could call a single, unified metaphysical ‘edifice’. This avoids the problem of the extreme complexity in overlap which we encountered in the *Sophist*, section 6.4 of chapter 6), and provides a new model for how the Forms govern the physical world. Necessity is now built into the *paradeigma*, rather than constructed by the interweaving the Great Kinds with the Forms. On the other hand, ‘compacting’ the Forms into such an ‘edifice’ comes at the expense of the ontological discreteness the Forms had in the earlier stage of Plato’s theory. I submit that Plato is therefore motivated to introduce a ‘mechanism’ for the individuation of Forms; this ‘mechanism’ is a mental operation. As we saw, there is in the *Timaeus* a divine agent, the *Demiurge*, that mentally individuates the Forms which it copies. The *Demiurge* looks at this wholesome ‘edifice’ comprising all Forms, and it copies one or the other Form in creating the physical objects in the world. (Although Plato does not say this explicitly, that the *Demiurge* individuates the Forms in the *paradeigma* is entailed by the fact that the *Demiurge* looks at the *paradeigma*, and makes particular things, which resemble particular Forms within the *paradeigma*, rather than the whole of the *paradeigma*.)

Importantly for our investigation, the *Demiurge* also provides something that was previously missing in Plato’s system, namely an *efficient cause* for generation and change. Pre-*Timaeus*, the Forms are powers with constitutional causal efficacy only (as per section 3.2 of chapter 3). In a sense the introduction of the *Demiurge* addresses (or

rather, pre-empts!) the complaint that Aristotle subsequently raises against Plato, concerning how the Forms could serve as *efficient* causes in his system:

One might be especially puzzled about what Forms contribute either to eternal sensibles or those that come and cease to be [. . .]. (*Metaphysics* A9, 991a8–10 = M5, 1079b12–4)

πάντων δὲ μάλιστα διαπορήσειεν ἂν τις τί ποτε συμβάλλεται τὰ εἶδη τοῖς αἰδίοις τῶν αἰσθητῶν ἢ τοῖς γιγνομένοις καὶ φθειρομένοις; [. . .].

I submit that Aristotle was unfair to Plato in discounting the constitutional causal role of Forms for things, but fair in pointing out that the Forms cannot serve as efficient causes (as discussed in section 3.3 of chapter 3). The Forms are not all there is in Plato's system, at least in the *Timaeus*, where Plato introduces the *Demiurge* too, who acts as an efficient cause upon the cosmos, copying the *paradeigma* into it. Aristotle would not have found the *Demiurge* a sound way to account for efficient causation, but this is a different issue. Plato found a way to introduce efficient causation within his system, and Aristotle did not credit him with that, whether Plato's solution was ultimately satisfactory or not.

7.6. Geometrical chemistry

We saw in chapter 3 that one major advancement of Plato's metaphysics over Anaxagoras's is that Plato posits that properties are transcendent, rather than physical beings. It is conceptually challenging, to say the least, to attempt to explain the physical world and its features through transcendent, nonphysical entities; and yet, this is exactly what Plato attempts to do with his theory of Forms. We are now in the position to see that in the *Timaeus*, Plato, as I understand him, tries to offer an ontology that bridges the transcendent–physical gap, to make it possible to explain how the transcendent grounds the physical in the cosmos. He puts forward what I call a *geometrical chemistry*; he posits that the four elements (fire, water, earth, and air) are *made of triangles*:

Every triangle, moreover, derives from two triangles, each of which has one right angle and two acute angles [...] This, then, we presume to be the origin of fire and of the other bodies, [...]. (53c8–d5)

τὰ δὲ τρίγωνα πάντα ἐκ δυοῖν ἄρχεται τριγώνοις, μίαν μὲν ὀρθὴν ἔχοντος ἑκατέρου γωνίαν, τὰς δὲ ὀξείας[. . .]. ταύτην δὴ πυρὸς ἀρχὴν καὶ τῶν ἄλλων σωμάτων ὑποτιθέμεθα [...].

By building the four elements out of geometrical entities, triangles, Plato is able to derive a priori the elements' physical and chemical properties, from the geometrical properties of their building blocks. For instance, he explains,

While there are indeed four kinds of bodies that come to be from the [right-angled] triangles we have selected, three of them come from triangles that have unequal sides, whereas the fourth alone is fashioned out of isosceles triangles. Thus not all of them have the capacity of breaking up and turning into one another, with a large number of small bodies turning into a small number of large ones and vice-versa. There are three that can do this. For all three are made up of a single type of triangle, so that when once the larger bodies are broken up, the same triangles can go to make up a large number of small bodies, assuming shape appropriate to them. And likewise, when numerous small bodies are fragmented into their triangles, these triangles may well combine to make up some single massive body belonging to another kind. So much, then, for our account of how these bodies turn into one another. (54b8–d5)

γίγνεται μὲν γὰρ ἐκ τῶν τριγώνων ὧν προηγήμεθα γένη τέτταρα, τρία μὲν ἐξ ἑνὸς τοῦ τὰς πλευρὰς ἀνίσους ἔχοντος, τὸ δὲ τέταρτον ἐν μόνον ἐκ τοῦ ἰσοσκελοῦς τριγώνου συναρμοσθέν. οὐκ οὖν δυνατὰ πάντα εἰς ἄλληλα διαλυόμενα ἐκ πολλῶν σμικρῶν ὀλίγα μεγάλα καὶ τοῦναντίον γίγνεσθαι, τὰ δὲ τρία οἷόν τε· ἐκ γὰρ ἑνὸς ἅπαντα πεφυκότα λυθέντων τε τῶν μειζόνων πολλὰ σμικρὰ ἐκ τῶν αὐτῶν συστήσεται, δεχόμενα τὰ προσήκοντα ἑαυτοῖς σχήματα, καὶ σμικρὰ ὅταν αὖ πολλὰ κατὰ τὰ τρίγωνα διασπαρῇ, γενόμενος εἰς ἀριθμὸς ἑνὸς ὅγκου μέγα ἀποτελέσειεν ἄν ἄλλο εἶδος ἔν. ταῦτα

μὲν οὖν λελέχθω περὶ τῆς εἰς ἄλληλα γενέσεως· οἷον δὲ ἕκαστον αὐτῶν γέγονεν εἶδος καὶ ἐξ ὧσων συμπεσόντων ἀριθμῶν, λέγειν ἂν ἐπόμενον εἴη.

Taking stock: How can transcendent entities make up physical objects? How are we to assess this metaphysical innovation of Plato's? My thought is that Plato commits himself to a methodological assumption, concerning how to account for the grounding of the sensible on the intelligible, which, on the one hand, is philosophically questionable; but on the other, it displays his ingenuity in trying to develop metaphysical solutions. I suggested in section 3.4. of chapter 3 that Plato must have been influenced in developing his metaphysical system by his deep interest for geometry and mathematics. I submit that this is the framework within which he conceives that the transcendent Forms can govern how physical objects are qualified, just as geometrical theorems govern the properties of, e.g., a carpenter's artefacts: if the perfect triangle's angles add up to 180 degrees, this is thereby true of the carpenter-made triangles in the world. This is his methodological assumption: if geometrical figures can govern what is true of the respective physical figures in the world (e.g., made by a carpenter), dictating what properties such figures possess, so can transcendent properties govern what is true of their respective physical counterparts. If it were not for such reasoning, it would not have made sense for Plato to say that a (e.g.) physical fire is hot by partaking of a transcendent, intelligible, nonphysical property, the Form of Heat.

7.7. Top-down and bottom-up structure

I argued in the preceding section of this chapter, as well as in section 3.4 of chapter 3, that Plato must have been influenced by his interest in mathematics and geometry in wanting to make the Forms transcendent, while still having them constitute sensible objects in the world, which partake of the Forms. Why, then, does he introduce the triangles as the building blocks of the elements in the cosmos? Why, in other words, does Plato want to bring geometry 'down to earth', as it were, after having established that transcendent entities, the Forms,

govern the properties of material objects? The reason, I argue, is that the new geometrical chemistry of the *Timaeus* strengthens Plato's stance that the transcendent governs the physical. In the first phase of his metaphysical thinking, Plato saw in geometry incontestable evidence that the transcendent *can* govern the physical, on account of the fact that certain features of physical figures may be shown to be true of them on the basis of proofs concerning transcendent figures. This shows that the governance of the physical by the transcendent is possible, and makes Plato's assumption that the transcendent Forms govern the constitution of things in the world plausible. However, in the *Timaeus*, Plato makes an even more ambitious metaphysical claim, which is supported by his innovative geometrical chemistry: if the physical is constituted by geometrical figures, which obey the laws of geometry, then the explanation of the properties and behaviour of the physical, as it derives from the transcendent, becomes much richer and detailed; furthermore, it just makes sense, how and why the world behaves as it does—it makes 'geometrical sense'! This is why, I submit, Plato makes triangles the constituents of the elements of the cosmos.

This brings us to the second insight we can gain from investigating Plato's metaphysical move of making the triangles constituents of the four elements, and thus of the physical world. What is distinctive of triangles, and very different from a more generic conception of parts of the Forms as constituents of physical objects, is that triangles are structured, and so do not 'transmit' only one property to their partakers (see section 5.3 of chapter 5). Further, triangles can compose with each other, and generate more complex structures. If triangles constitute the elements, and the elements constitute all things in the cosmos, then all structure in the cosmos can be ultimately explained by the structure of the compositions of the triangles. Or, *can it*? Interestingly, Plato thinks that more is needed, for a full explanation of structure in the cosmos, because he introduces the *paradeigma*, which is composite. Why does Plato add it? On my interpretation the answer, from Plato's point of view, is twofold. First, not all structure is reducible to triangular-composition. For example, the metaphysical structure of the necessity of anything hot being hotter than something cold is not reducible to triangular composition; it is a different type of structure, which needs its own underpinning ontology; the structure of the *paradeigma*

provides it. Second, although the triangles can explain how a structure like, e.g., a forest is built in the world, namely from triangular composition, they cannot explain *why* it is built—why, e.g., a forest comes to be. The *paradeigma* provides *teleological structure* too, by embodying the Good, which the *Demiurge* copies into the world, bottom-up.¹⁵

In concluding this section, it is interesting to reflect once again on how far-reaching the influence of Anaxagoras is on Plato's metaphysics. The ways in which Plato introduces structure in the universe, in the *Timaeus*, are comparable to the way that Anaxagoras does it. Anaxagoras introduced structure in two different ways, as we saw in chapters 1 and 2: first, primitively, through the seeds, which are interspersed in his universe (see, e.g., B4); additionally, structure is introduced into the cosmos through the effects of the cosmic vortex's movement, which is guided by *nous* (see, e.g., B9 and B12). Similarly, Plato in the *Timaeus* introduces structure in the cosmos primitively, through the triangles in the four elements; and also, through the *paradeigma*, which is copied by the *Demiurge* in building the sensible world.

7.8. Closing remarks

In this chapter I brought to the fore some of the metaphysical innovations Plato introduces in the *Timaeus*, with respect to his theory of Forms and participation, but also his hitherto unacknowledged

¹⁵ In the *Timaeus*, Plato thinks that *images or copies* (μῆματα, 50c4), rather than *parts* of Forms, come to be present in Form-less space (the so-called *receptacle*) and qualify it (52d–e). He also tells us that the *Demiurge* copies the Forms/*paradeigma* in creating the things in the world. I would like to register some reflections, here, which I will not pursue in detail, regarding metaphysical problems that arise in connection with the copies or images of the Forms/*paradeigma*. The *copies* or images of the Forms/*paradeigma* in the receptacle *qualify* the objects they are in (51a–b). Thus, the copies of the Forms have a *functional role* in the things they are in, in the receptacle: they qualify these things with the properties that the Forms stand for. So their role is to serve the qualifying function the respective Forms would serve in each of the things the copies are in. In a sense, the *copies* of the Forms reintroduce some of the metaphysical problems that we saw that the *parts* of the Forms gave rise to. This undermines the *One Over Many Principle* of the theory, because the copies of each Form multiply the Form in its metaphysical role of qualifying things, because each copy performs the qualifying function of its respective Form—see section 5.5 in chapter 5.

solution to the Third Man Argument, and the further developments of his account of transcendent powers and transcendent necessity. In the *Timaeus*, Plato takes the bold step of building the world out of geometry, to 'enthroned' mathematical modality at the core of the physical universe. Plato in the *Timaeus* is Plato-successor. By this I mean that Plato undertakes a substantial metaphysical experiment, to overcome the predicaments he could see that his theory of Forms was facing, and offer a more satisfying explanation of the phenomena in the cosmos.

Looking forward, beyond this book's project, Aristotle's metaphysics will be a paradigm shift from Plato's treatment of structure in the *Timaeus*—from the *paradeigma* to the category of *substantial forms*.

Conclusion

The overarching argument of this book is that Plato's metaphysics is deeply influenced by Anaxagoras's, and that understanding this dependence reveals a new and unexplored dimension of Plato's thought.

Looking at their metaphysical systems from the perspective of the history of philosophy, one of the most fundamental similarities between the two, which sets them apart from their philosophical successors, is that *causation*, for both Anaxagoras and Plato consists in the cause *being present in* its environment (i.e., as a constituent of what there is in the environment), and not in the cause *affecting* its environment to give rise to the effect (as an efficient cause), as it will be the case from Aristotle onward. For both philosophers, causes are powers—the Opposites for Anaxagoras, and the Forms for Plato—which bring about the qualification of objects with properties. I have called this Anaxagorean and Platonic conception of causation *constitutional causation*, whereby a causal power is a *difference-maker* for an object, by its presence in the constitution of the object it qualifies.

Notwithstanding this common account of causation between them, there are however significant differences between Anaxagoras's and Plato's ontologies of properties, which bear on their respective accounts of constitutional causes. For Anaxagoras, the Opposites are *physical* entities in nature; while in Plato's system, the Forms are *transcendent* entities, existing outside the physical realm of nature. This difference generates difficulties for Plato, concerning the constitution of sensible things out of (parts of) the Forms, but also opens many metaphysical possibilities, which have been explored further in the history of metaphysics and continue to generate interests.

In addition to this conception of causation as constitutional, the most significant idea Plato inherits from Anaxagoras, and creatively develops in his system, is that of *overlap*. I argue that understanding overlap is understanding the crux of Plato's system, and also holds

promise for novel developments in current philosophy. For Plato partaking of a Form is (pre-*Timaeus*) overlapping *constitutionally* with that Form, which qualifies the partaker with the property the Form stands for. On this model, parts of the Form are parts/constituents of the object. For instance, if an object partakes of the Form of Heat, the transcendent Form of Heat contributes to the object's physical constitution, qualifying the object as hot. Plato's account of the *physical* constitution of objects out of *transcendent* Forms crosses an ontological gap which *we* would find unbridgeable; but I show in the book that for Plato, this crossing-over is comparable to the (unquestionable) governance of physical objects by geometrical axioms and theorems, which determine the properties of these objects. Later in his thinking, Plato has reasons to give up *constitutional overlap* as the 'mechanism' that accounts for how objects are qualified by properties, but nevertheless, he never abandons the general stance that objects overlap with the Forms that qualify them; rather, Plato innovates metaphysically, by introducing *qualitative overlap* between the transcendent world of Being and the natural world of Becoming.

Overlap is used, possibly overused by Plato. Throughout his work, Plato puts overlap to use to offer a metaphysical account of (what we call) property instantiation, of relations between *relata*, and of necessity. We saw that his Forms, even though transcendent, overlap with physical objects in nature that partake of them, thereby qualifying these objects as hot, or red, or virtuous, etc. The qualification of *relata* (e.g., being qualified as equal) is accounted by Plato following the same approach. Thus, in Plato's system, the qualification of two equal things does not result from there being a relation of equality between them, but from their *plural overlap* with the Form of Equality: plural overlap with the Form of Equality consists in two (or more) things sharing a single part of Equality between them; namely, it consists in these two things being equal with each by sharing a single part of Equality between them. A further way in which overlap serves Plato's explanatory goals is by providing a metaphysical account of *necessity*. This account does not recommend itself to us today, philosophically, but it is noteworthy that Plato distinguishes the *type* of overlap that embodies necessity from other types of overlap in his system; necessity involves the *permeation* of Forms by other Forms or Great Kinds.

A metaphysical challenge that drives the development of Plato's system is how to reify *structure* in his theory of Forms. Anaxagoras's stance is to treat structure as a distinct type of ontological item, the seeds, different from properties (Opposites), but like them, a constituent of objects. Structures are primitive in Anaxagoras's ontology and exist primordially, as seeds, in the universe. Plato's stance, which will be foundational for the history of metaphysics, is that *structure is a property*, rather than an item of a different ontological type than properties in the ontology.

A structure may qualify only single individuals, e.g., this object as being a bed; or it may qualify several individuals together, e.g., those trees as being a forest; in the latter case, the trees of the forest partake plurally of the Form of Forest.¹ In such a case, in Plato's relationless ontology, the *interdependence* of the relata, the trees, that make up the forest (which in contemporary metaphysics is embodied in their relation between them) is not lost in Plato's ontology; for him interdependence is embodied in the *plural* overlap of the trees with the structural Form of Forest.

However, therein lies a challenge for Plato: constitutional overlap with structures, e.g., overlap between an object and a part of a perfect Triangle, does not qualify the object as triangular, in the way that, e.g., overlap with a part of the Hot qualifies the object as hot. I argued that Plato finds a way out of this metaphysical hurdle; it is hard to over-emphasize the significance of his metaphysical breakthrough on this issue, which allows overlap with a part of a structural Form to qualify the object with that structure. The challenge for Plato was to show that structural Forms, e.g., Equality, are partless (*qua* fusions, and thus *monoeides*), and hence, unstructured, and so, similar to the Forms of opposite properties, as, e.g., Heat. Plato innovates by arguing for the metaphysical possibility of *composites which are partless*.² Plato's account of composites that are partless (an early type of emergence) opens up an uncharted territory for contemporary metaphysics.

¹ The Form of Forest is a made-up example to make the point more perspicuous; it isn't an example used by Plato.

² Significantly, this account is different from the *holistic emergence* developed in Aristotle's metaphysics of substance, with which we are now familiar in contemporary metaphysics.

What I have tried, most of all, to achieve in this work is to propose a new reading of Plato's metaphysics, which emerges from studying its roots in Anaxagoras's metaphysics. Not all that this novel interpretative approach can deliver, is delivered in this book; my hope is that this book will motivate others to take this approach forward, delving further into Plato's wonderfully rich metaphysical system, to explore what it can offer us.

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